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PROTOCOLS TO THE THRESHOLD TEST BAN AND PEACEFUL NUCLEAR EXPLOSIONS TREATIES WITH THE UNION OF SOVIET SOCIALIST REPUBLICS

MESSAGE

FROM

THE PRESIDENT OF THE UNITED STATES

TRANSMITTING

THE PROTOCOL TO THE TREATY BETWEEN THE UNITED STATES OF AMERICA AND THE UNION OF SOVIET SOCIALIST REPUBLICS ON THE LIMITATION OF UNDERGROUND NUCLEAR WEAPON TESTS, AND THE PROTOCOL TO THE TREATY BETWEEN THE UNITED STATES OF AMERICA AND THE UNION OF SOVIET SOCIALIST REPUBLICS ON UNDERGROUND NUCLEAR EXPLOSIONS FOR PEACEFUL PURPOSES (THE PROTOCOLS), SIGNED AT WASHINGTON ON JUNE 1, 1990

June 28, 1990.—Protocols were read the first time, and together with the accompanying papers, referred to the Committee on Foreign Relations and ordered to be printed for the use of the Senate

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LETTER OF TRANSMITTAL

THE WHITE HOUSE, *June 28, 1990.*

To the Senate of the United States:

I transmit herewith, for the advice and consent of the Senate to ratification, the Protocol to the Treaty Between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Underground Nuclear Weapon Tests, and the Protocol to the Treaty Between the United States of America and the Union of Soviet Socialist Republics on Underground Nuclear Explosions for Peaceful Purposes (the Protocols). The Protocols were signed at Washington on June 1, 1990. I transmit also, for the information of the Senate, the Report of the Department of State on the Protocols, including section-by-section analyses of the Protocols and letters exchanged by the Heads of Delegation to the Nuclear Testing Talks, which will implement certain aspects of the Protocol to the Treaty on the Limitation of Underground Nuclear Weapon Tests.

The Protocols provide for effective verification of compliance with the Treaty on the Limitation of Underground Nuclear Weapon Tests, signed on July 3, 1974, and the Treaty on Underground Nuclear Explosions for Peaceful Purposes, signed on May 28, 1976 (the Treaties). These Treaties, which limit the yield of nuclear weapon tests and individual nuclear explosions for peaceful purposes to no more than 150 kilotons, were transmitted to the Senate for its advice and consent to ratification on July 29, 1976. The Protocols replace, and should be substituted for, the protocols that were submitted with the Treaties at that time. In addition, the Administration remains committed to the nuclear testing treaty safeguards that were submitted to the Senate in 1987, which are essential to the national security and to the maintenance of a credible nuclear deterrent.

The Protocols represent the successful culmination of several years of effort to provide for effective verification of compliance with the Treaties. Negotiations to develop new Protocols to verify compliance with the limits established by the Treaties began in November 1987 and continued until May 1990, when the Protocols were completed. The Protocols provide for a variety of activities related to verification, including the use of the hydrodynamic yield measurement method. Operational changes in the U.S. nuclear test program, including changes at the Nevada Test Site, which implementation of the verification measures will entail were considered carefully and have been judged manageable and therefore acceptable in the interests of effective verification.

I believe these Treaties are in the national interest. Therefore, I urge the Senate to give early and favorable consideration to the Treaties including their Protocols and to give its advice and consent to their ratification.

George Bush.

LETTER OF SUBMITTAL

Department of State,
Washington, June 26, 1990.

The President,
The White House.

The President: I have the honor to submit to you the Protocol to the Treaty Between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Underground Nuclear Weapon Tests, and the Protocol to the Treaty Between the United States of America and the Union of Soviet Socialist Republics on Underground Nuclear Explosions for Peaceful Purposes (the Protocols). Accompanying this Report are section by section analyses of the Protocols. I recommend that you transmit the Protocols to the Senate for their advice and consent to ratification.

The Protocols implement, and provide for effective verification of compliance with, the Treaty Between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Underground Nuclear Weapon Tests (TTBT) signed on July 3, 1974, and the Treaty Between the United States of America and the Union of Soviet Socialist Republics on Underground Nuclear Explosions for Peaceful Purposes (PNET) signed on May 28, 1976. Those two Treaties, which limit the yield of nuclear weapon tests and individual explosions for peaceful purposes to no more than 150 kilotons, were transmitted to the Senate for its advice and consent to ratification on July 29, 1976. (Executive N, 94th Cong., 2nd Sess. 1976.) Committee hearings were held in the summer of 1976, but at the request of the Administration in 1978, the Treaties were not reported for consideration by the full Senate.

On January 13, 1987, President Reagan requested that the Senate give its advice and consent to ratification of the two Treaties, subject to the condition that ratification be deferred until additional agreements ensuring effective verification of the Treaties could be negotiated and submitted to the Senate for its advice and consent. Together with its request for advice and consent to ratification in 1987, the Administration provided the Senate with a list of nuclear testing treaty safeguards. (Threshold Test Ban Treaty and Peaceful Nuclear Explosions Treaty: Hearings before the Senate Committee on Foreign Relations, 100th Cong., 1st Sess. at 305.) The Administration considers safeguards essential to ensuring the nation's ability to retain the technical means and knowledge necessary to support the nuclear deterrent and existing and future national security policies and therefore remains committed to these safeguards.

Negotiations to establish effective verification measures for the TTBT and the PNET began in November 1987. The two new Protocols were negotiated in the six rounds of Nuclear Testing Talks (NTT) which continued until May 1990. As part of the NTT, the United States and the Soviet Union concluded an agreement in 1988 providing for a Joint Verification Experiment under which each side used the hydrodynamic yield measurement method to measure the yield of a nuclear test at the other side's nuclear weapon test site. At the 1989 ministerial meeting at Jackson Hole, Wyoming, the United States and the Soviet Union agreed in principle on the routine use of on-site hydrodynamic yield measurements and in-country seismic monitoring with respect to verification of the TTBT. The two Protocols were signed on June 1, 1990, at the Washington Summit. The Protocols, submitted herewith, provide for the effective verification sought by this Administration and the previous Administration.

The Protocol to the TTBT is an integral part of the TTBT; it would enter into force at the same time as the TTBT and remain in force as long as the TTBT remains in force. The Protocol to the PNET is similarly an integral part of the PNET. Although the two Treaties and their respective Protocols complement each other, the Protocols were negotiated separately and they deal with fundamentally different nuclear programs. Each Protocol stands on its own.

The TTBT and its Protocol deal with nuclear weapon tests, while the PNET and its Protocol deal with nuclear explosions having non-military applications, such as oil and gas extraction. The United States has not conducted a nuclear explosion for peaceful purposes since 1973 and has no plans to conduct such explosions in the future. The Soviet Union has not announced a nuclear explosion for peaceful purposes since 1988.

The new Protocols replace, and should be substituted for, the Protocols that were transmitted to the Senate with the Treaties on July 29, 1976. However, the Agreed Statement relating to paragraph 2(c) of Article III of the PNET, signed on May 13, 1976, and transmitted to the Senate on July 29, 1976, will apply to the PNET as originally contemplated. The understanding regarding slight, unintended breaches of the 150-kiloton limit established by the TTBT remains part of the transmittal documents accompanying the original transmittal of the TTBT for Senate advice and consent to ratification and the associated public record.

The new Protocols provide for unprecedented on-site and in-country verification measures designed to ensure verification of compliance with the TTBT and the PNET. Each Protocol provides the right to use the hydrodynamic yield measurement method with respect to all tests or explosions having a planned yield exceeding 50 kilotons, so that the 150-kiloton yield limitation established by the TTBT and PNET can be effectively verified. The TTBT Protocol also provides the right for in-country seismic monitoring of all tests having planned yields exceeding 50 kilotons. Each Protocol also provides the right to on-site inspection with respect to all tests for explosions having planned yields exceeding 35 kilotons. The PNET Protocol permits the temporary deployment of a local seismic network for specified group explosions, to confirm the declared number of explosions in the group. In addition, the Protocols place constraints on tests and explosions in cavities, tests that include two or more explosions, group explosions, and weapon tests in configurations that raise special verification concerns. Furthermore, each Protocol requires an extensive information exchange with respect to each test or explosion subject to verification measures, and establishes means of validating the information provided. Each Protocol specifies in precise detail the procedures to be followed in the exercise of the verification rights provided. Finally, the Protocols provide for a bilateral Coordinating Group to be established for each test or explosion for peaceful purposes, to coordinate the activities of personnel of both Parties and to deal with any questions that may arise. Also enclosed, for the information of the Senate, are letters exchanged by the Heads of Delegation to the Nuclear Testing Talks, which will implement certain aspects of the TTBT Protocol.

Agencies concerned with U.S. weapon development programs participated throughout the negotiation of the Protocols. In addition, experts from our national weapon laboratories served as technical advisers throughout this negotiation. Operational changes in the U.S. nuclear test program, including changes at the Nevada Test Site, which implementation of the verification measures will entail were considered carefully and have been judged manageable and therefore acceptable in the interests of effective verification.

The Protocols submitted herewith will provide effective verification of compliance with the Threshold Test Ban Treaty and the Treaty on Underground Nuclear Explosions for Peaceful Purposes, and are in the national interest. Accordingly, I recommend that you transmit the Protocols to the Senate at the earliest possible date for their advice and consent to ratification.

Respectfully submitted,

JAMES W. BAKER III.

Enclosures: As stated.

PROTOCOL TO THE TREATY BETWEEN THE UNITED STATES OF AMERICA AND THE UNION OF SOVIET SOCIALIST REPUBLICS ON THE LIMITATION OF UNDERGROUND NUCLEAR WEAPON TESTS

The United States of America and the Union of Soviet Socialist Republics, hereinafter referred to as the Parties,

Confirming the provisions of the Treaty Between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Underground Nuclear Weapon Tests of July 3, 1974, hereinafter referred to as the Treaty,

Convinced of the necessity to ensure effective verification of compliance with the Treaty,

Have agreed as follows:

SECTION I. DEFINITIONS

For the purposes of this Protocol:

1. The term "test site" means a geographical area for the conduct of underground nuclear weapon tests, specified in paragraph 1 or in accordance with paragraph 2 of Section II of this Protocol.

2. The term "underground nuclear weapon test," hereinafter "test," means either a single underground nuclear explosion conducted at a test site, or two or more underground nuclear explosions conducted at a test site within an area delineated by a circle having a diameter of two kilometers and conducted within a total period of time of 0.1 second. The yield of a test shall be the aggregate yield of all explosions in the test.

3. The term "explosion" means the release of nuclear energy from an explosive canister.

4. The term "explosive canister" means, with respect to every explosion, the container or covering for one or more nuclear explosives.

5. The term "Testing Party" means the Party conducting a test.

6. The term "Verifying Party" means the Party entitled to carry out, in accordance with this Protocol, activities related to verification of compliance with the Treaty by the Testing Party.

7. The term "Designated Personnel" means personnel appointed by the Verifying Party from among its nationals and included on its list of Designated Personnel, in accordance with Section IX of this Protocol, to carry out activities related to verification in accordance with this Protocol in the territory of the Testing Party.

8. The term "Transport Personnel" means personnel appointed by the Verifying Party from among its nationals and included on its list of Transport Personnel, in accordance with Section IX of this Protocol, to provide transportation for Designated Personnel, their baggage, and equipment of the Verifying Party between the territory of the Verifying Party and the point of entry in the territory of the Testing Party.

9. The term "point of entry" means Washington, D.C. (Dulles International Airport), for Designated Personnel and

Transport Personnel, and Travis Air Force Base, California, for Designated Personnel and Transport Personnel and for equipment specified in Section VIII of this Protocol, with respect to the United States of America; and Moscow (Sheremetyevo-2 International Airport) for Designated Personnel and Transport Personnel and for equipment specified in Section VIII of this Protocol, and Leningrad (Pulkovo-2 International Airport) for Designated Personnel and Transport Personnel, with respect to the Union of Soviet Socialist Republics. Other locations may serve as points of entry for specific tests, as agreed by the Parties.

10. The term "hydrodynamic yield measurement method" means the method whereby the yield of a test is derived from on-site, direct measurement of the properties of the shock wave as a function of time during the hydrodynamic phase of the ground motion produced by the test.

11. The term "seismic yield measurement method" means the method whereby the yield of a test is derived from measurement of parameters of elastic ground motion produced by the test.

12. The term "on-site inspection" means activities carried out by the Verifying Party at the test site of the Testing Party, in accordance with Section VII of this Protocol, for the purposes of independently obtaining data on conditions under which the test will be conducted and for confirming the validity of data provided by the Testing Party.

13. The term "emplacement hole" means any drill-hole, shaft, adit or tunnel in which one or more explosive canisters, associated cables, and other equipment are installed for the purposes of conducting a test.

14. The term "end of the emplacement hole" means the reference point established by the Testing Party beyond the planned location of each explosive canister along the axis of the emplacement hole.

15. The term "satellite hole" means any drill-hole, shaft, adit or tunnel in which sensing elements and cables and transducers are installed by the Verifying Party for the purposes of hydrodynamic measurement of the yield of a specific test.

16. The term "standard configuration" means either the standard vertical configuration or the standard horizontal configuration of a test described in paragraph 2 or 3 of Section V of this Protocol.

17. The term "non-standard configuration" means a configuration of a test different from that described in paragraph 2 or 3 of Section V of this Protocol.

18. The term "hydrodynamic measurement zone" means a region, the dimensions of which are specified in paragraph 1 of Section V of this Protocol, within which hydrodynamic yield measurements are carried out.

19. The term "reference test" means a test, identified by the Testing Party as a reference test, that meets the requirements of paragraph 8 of Section V of this Protocol.

20. The term "emplacement point" means the point in the emplacement hole that coincides with the center point of an emplaced explosive canister.

21. The term "choke section" means a barrier designed to restrict the flow of energy from an explosive canister.

22. The term "area of a pipe" or "area of a cableway" means the area of the external cross section of that pipe or cableway measured in a plane perpendicular to the axis of that pipe or cableway at the point within the zone specified in paragraph 2(c), 3(e), or 3(f) of Section V of this Protocol where its cross section is largest.

23. The term "sensing elements and cables" means switches, cables, and cable segments that provide direct measurement of the position of a shock front as a function of time, and are installed in a satellite hole by the Verifying Party for the purposes of use of the hydrodynamic yield measurement method.

24. The term "transducer" means a device that converts physical properties of a shock wave, such as stress and particle velocity, into a recordable signal, and is installed in a satellite hole by the Verifying Party, with associated power supplies, for the purposes of use of the hydrodynamic yield measurement method, with respect to explosions having a planned yield exceeding 50 kilotons and characteristics differing from those set forth in paragraph 2 or 3 of Section V of this Protocol.

25. The term "core sample" means an intact cylindrical sample of geologic material having dimensions no less than two centimeters in diameter and two centimeters in length.

26. The term "rock fragment" means a sample of geologic material having an irregular shape and a volume no less than 10 cubic centimeters.

27. The term "geodetic measurements" means the determination of the geometric position of points within tunnels or cavities.

28. The term "Designated Seismic Station" means any one of the seismic stations designated by each Party, in accordance with Section VI of this Protocol, at which activities related to verification are carried out in accordance with this Protocol.

29. The term "Bilateral Consultative Commission" means the Commission established in accordance with Section XI of this Protocol.

30. The term "Coordinating Group" means a working group of the Bilateral Consultative Commission that is established for each test with respect to which activities related to verification are carried out.

31. The term "coordinated schedule" means the schedule, including the specific times and durations for carrying out activities related to verification for a specific test, established in the Coordinating Group as specified in paragraph 12 of Section XI of this Protocol.

32. The term "Nuclear Risk Reduction Centers" means the Centers located in Washington, D.C., and Moscow, established in accordance with the Agreement Between the United States of America and the Union of Soviet Socialist Republics on the Establishment of Nuclear Risk Reduction Centers of September 15, 1987.

SECTION II. TEST SITES

1. The test sites for the Parties are: the Nevada Test Site, for the United States of America; and the Northern Test Site (Novaya Zemlya) and the Semipalatinsk Test Site, for the Union of Soviet Socialist Republics. Upon entry into force of the Treaty, each Party, for each of its test sites, shall provide the other Party with:

(a) a precise written description of the boundaries; and

(b) a diagram with geographic coordinates of the boundaries to the nearest second, to a scale no smaller than 1:250,000.

2. Following entry into force of the Treaty, if a Party decides to establish a new test site or to change the boundaries of a test site specified in paragraph 1 of this Section, the description and diagram specified in paragraph 1 of this Section shall be transmitted to the other Party no less than 12 months prior to the planned date for conducting the first test at the new test site or area of expansion of a previously specified test site.

3. A test site of a Party shall be located only within its territory. All tests shall be conducted solely within test sites specified in paragraph 1 or in accordance with paragraph 2 of this Section.

4. For the purposes of the Treaty and this Protocol, all underground nuclear explosions at test sites specified in paragraph 1 or in accordance with paragraph 2 of this Section shall be considered underground nuclear weapon tests and shall be subject to all provisions of the Treaty and this Protocol.

SECTION III. VERIFICATION MEASURES

1. For purposes of verification of compliance with the Treaty, in addition to using available national technical means, the Verifying Party shall have the right, with respect to tests that are conducted 200 days or more following entry into force of the Treaty:

(a) with respect to a test having a planned yield exceeding 50 kilotons, to carry out any or all of the verification activities associated with use of the hydrodynamic yield measurement method, in accordance with Section V of this Protocol, with respect to each explosion in the test;

(b) with respect to a test having a planned yield exceeding 50 kilotons, to carry out any or all of the verification activities associated with use of the seismic yield measurement method, in accordance with Section VI of this Protocol; and

(c) with respect to a test having a planned yield exceeding 35 kilotons, to carry out any or all of the verification activities associated with on-site inspection, in accordance with Section VII of this Protocol, with respect to each explosion in the test, except that such activities may be carried out with respect to a test having a planned yield exceeding 50 kilotons only if the Verifying Party does not use the hydrodynamic yield measurement method.

2. In addition to the rights specified in paragraph 1 of this Section, for the purposes of building confidence in the implementation of this Protocol and improving its national technical means of verification, the Verifying Party shall have the right:

(a) if, in each of the five calendar years immediately following entry into force of the Treaty, the Testing Party does not conduct at least two tests having a planned yield exceeding 50 kilotons, to use the hydrodynamic yield measurement method, in accordance with Section V of this Protocol, with respect to two tests from among those having the highest planned yields that the Testing Party conducts in that calendar year;

(b) if, in the sixth calendar year following entry into force of the Treaty and in each calendar year thereafter, unless the Parties otherwise agree, the Testing Party does not conduct at least one test having a planned yield exceeding 50 kilotons, to use the hydrodynamic yield measurement method, in accordance with Section V of this Protocol, with respect to one test from among those having the highest planned yield that the Testing Party conducts in that calendar year;

(c) if, in any calendar year, the Testing Party postpones a test having a planned yield of 50 kilotons or less to the following calendar year, after having been notified by the Verifying Party of its intent to use the hydrodynamic yield measurement method with respect to that test, to use such method with respect to that test in the following calendar year. This right shall be additional to the rights specified in paragraph 1(a) of this Section and in subparagraphs (a) and (b) of this paragraph; and

(d) in addition to the rights specified in subparagraphs (a), (b), and (c) of this paragraph, if, in each of the five calendar years beginning with the conduct of the first test by the Testing Party at a new test site, the Testing Party does not conduct at least two tests having a planned yield exceeding 50 kilotons at the new test site, the Verifying Party shall have the right to use the hydrodynamic yield measurement method, in accordance with Section V of this Protocol, with respect to two tests from among those having the highest planned yields that the Testing Party conducts at the new test site in that calendar year.

3. If the Verifying Party has notified the Testing Party that it intends to use the hydrodynamic yield measurement method with respect to a specific test including more than one explosion, unless the Parties agree on verification measures with respect to such a test:

(a) the distance between the closest points of any two adjacent explosive canisters shall be no less than 50 meters; and

(b) the time of each explosion shall be established by the Testing Party so as to permit the carrying out of hydrodynamic yield measurements for each explosion for a distance of no less than 30 meters in the satellite hole closest to the emplacement hole with which it is associated.

4. If the Verifying Party has notified the Testing Party that it intends to use the hydrodynamic yield measurement method with respect to a specific test, and if that test is conducted in more than one emplacement hole, the Testing Party shall have the right to conduct that test only if no more than one emplacement hole has characteristics or contains explosive canisters having characteristics differing from those set forth in paragraph 2 or 3 of Section V of this Protocol with respect to a test of standard configuration, unless the Parties agree on verification measures with respect to such a test.

5. The Testing Party shall have the right to conduct a test having a planned yield exceeding 35 kilotons within a time period of less than two seconds of any other test having a planned yield exceeding 35 kilotons only if the Parties agree on verification measures with respect to such tests. No test shall be conducted within 15 minutes prior to or following a reference test, unless the Parties otherwise agree.

6. The Testing Party shall have the right to conduct a test having a planned yield exceeding 35 kilotons in a cavity having a volume exceeding 20,000 cubic meters only if the Parties agree on verification measures with respect to such a test.

7. The Verifying Party, by notifying the Testing Party that it intends to use the hydrodynamic yield measurement method with respect to a test of non-standard configuration having a planned yield exceeding 50 kilotons, shall have the right to require a reference test for this non-standard test, in order to compare the yields measured through its national technical means for these two associated tests with the yield obtained by carrying out hydrodynamic yield measurement of the reference test. The right of the

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Verifying Party to a reference test shall be independent of whether or not it actually carries out hydrodynamic yield measurements of the test of non-standard configuration.

8. With respect to the requirement for a reference test:

(a) if the Testing Party, at the time it provides notification of a test, identifies that test as a reference test for a future test of non-standard configuration, and if the Verifying Party does not use the hydrodynamic yield measurement method with respect to the identified reference test, the Verifying Party shall forfeit its right to require a reference test for that test of non-standard configuration and for any subsequent test of non-standard configuration that would be associated with that reference test, if the Testing Party conducts the identified reference test;

(b) the Testing Party shall have the right to identify only one test of standard configuration as a reference test not associated with any specific test of non-standard configuration until it has conducted an associated test of non-standard configuration for which this test serves as a reference test, or unless it simultaneously provides notification of the associated test of non-standard configuration; and

(c) if the Testing Party, at the time it provides notification of a test of standard configuration, indicates that the test will satisfy a requirement for a reference test for a previously conducted test of non-standard configuration, and if the Verifying Party notifies the Testing Party of its intent not to use the hydrodynamic yield measurement method with respect to that reference test, the Verifying Party shall forfeit its right to require a reference test for the previously conducted test of non-standard configuration. In that case, the Testing Party shall have the right to cancel that reference test.

9. Following notification by the Verifying Party, in accordance with paragraph 5 of Section IV of this Protocol, of whether or not it intends to carry out any of the activities related to verification for a specific test, and, if so, which activities, the Verifying Party shall forfeit its right to revise that notification unless the Testing Party changes the previously declared location of that test by more than one minute of latitude or longitude or changes the planned yield of a test from 50 kilotons or less to a planned yield exceeding 50 kilotons. If the Testing Party makes any such change, the Verifying Party shall have the right to revise its previous notification and to carry out

any of the activities specified in paragraph 1 or 2 of this Section and, if the Verifying Party notifies the Testing Party that it intends to carry out activities related to verification with respect to that test, in accordance with paragraph 20 of Section IV of this Protocol, the Testing Party shall not conduct the test less than 180 days following the date of the revised notification by the Verifying Party, unless the Parties otherwise agree.

10. Designated Personnel shall have the right to carry out activities related to verification in accordance with this Protocol, 24 hours a day, provided such activities are consistent with the safety requirements of the Testing Party at the test site or Designated Seismic Station. All operations and procedures that require the participation of Designated Personnel and personnel of the Testing Party shall be carried out in accordance with the technical operations and practices at the test site or Designated Seismic Station of the Testing Party, and in this connection:

(a) Designated Personnel:

(i) shall not interfere with activities of personnel of the Testing Party at the test site or Designated Seismic Station; and

(ii) shall be responsible for the working of their equipment, its timely installation and operation, participation in such operations, including dry runs, as the Testing Party may request, and recording of data; and

(b) the Testing Party:

(i) shall be under no obligation to delay the test because of any malfunction of the equipment of the Verifying Party or inability of Designated Personnel to carry out their functions, unless the Testing Party caused such a situation to arise; and

(ii) shall bear full responsibility for the preparation and conduct of the test and shall have exclusive control over it.

11. If the Verifying Party has notified the Testing Party that it intends to carry out activities related to verification for a specific test, the Testing Party shall have the right to make changes in the timing of its operations related to the conduct of that test, except that the Testing Party shall not make changes in the timing of its operations related to the conduct of that test that would preclude Designated Personnel from carrying out their rights related to verification provided in this Protocol.

If the Testing Party notifies the Verifying Party of a change in the timing of its operations that the Verifying Party deems would either preclude or significantly limit the exercise of such rights, the Coordinating Group shall meet at the request of the Representative of the Verifying Party to the Coordinating Group, to consider the change in order to ensure that the rights of the Verifying Party are preserved. If the Coordinating Group cannot agree on a revision to the coordinated schedule that will ensure the rights of both Parties as provided in this Protocol, there shall be no advancement of events within the coordinated schedule due to such a change. Either Party may request that the Bilateral Consultative Commission consider any such change in timing of operations or in the coordinated schedule, in accordance with paragraph 15 of Section XI of this Protocol.

SECTION IV. NOTIFICATIONS AND INFORMATION RELATING TO TESTS

1. Unless otherwise provided in this Protocol, all notifications required by this Protocol shall be transmitted through the Nuclear Risk Reduction Centers. The Nuclear Risk Reduction Centers may also be used, as appropriate, to transmit other information provided in accordance with this Protocol.

2. Not later than the June 1 immediately following entry into force of the Treaty, and not later than June 1 of each year thereafter, each Party shall provide the other Party with the following information on tests that it intends to conduct in the following calendar year:

(a) the projected number of tests having a planned yield exceeding 35 kilotons;

(b) the projected number of tests having a planned yield exceeding 50 kilotons; and

(c) if the number of tests declared in accordance with subparagraphs (a) and (b) of this paragraph is less than the number of tests for which rights are specified in paragraph 2 of Section III of this Protocol, whether it intends to conduct a sufficient number of other tests to permit the Verifying Party to exercise fully the rights specified in paragraph 2 of Section III of this Protocol.

3. On the date of entry into force of the Treaty each Party shall provide the other Party with the information

specified in paragraphs 2(a) and 2(b) of this Section for the remainder of the calendar year in which the Treaty enters into force, and, if the Treaty enters into force after June 1, information specified in paragraph 2 of this Section for the following calendar year.

4. No less than 200 days prior to the planned date of any test with respect to which the Verifying Party has the right to carry out any activity related to verification in accordance with this Protocol, the Testing Party shall provide the Verifying Party with the following information to the extent and degree of accuracy available at that time:

(a) the planned date of the test and its designation;

(b) the planned date of the beginning of emplacement of explosive canisters;

(c) the location of the test, expressed in geographic coordinates to the nearest minute;

(d) whether the planned yield of the test exceeds 35 kilotons;

(e) whether the planned yield of the test exceeds 50 kilotons;

(f) if the planned yield is 50 kilotons or less, whether the test is one of the tests with respect to which the Verifying Party has the right to use the hydrodynamic yield measurement method, in accordance with paragraph 2 of Section III of this Protocol;

(g) the planned depth of each emplacement hole to the nearest 10 meters;

(h) the type or types of rock in which the test will be conducted, including the depth of the water table;

(i) whether the test will be of standard or non-standard configuration; and

(j) whether the test will serve as a reference test for:

(i) a previously conducted test of non-standard configuration with which such a reference test is associated;

(ii) a future test of non-standard configuration for which notification has been provided or is being simultaneously provided in accordance with paragraph 8(b) of Section III of this Protocol; or

(iii) a future test of non-standard configuration for which the Testing Party has not yet provided notification.

5. Within 20 days following receipt of information specified in paragraph 4 of this Section, the Verifying Party shall inform the Testing Party, in a single notification, whether or not it intends to carry out, with respect to this test, any activities related to verification that it has a right to carry out, in accordance with Section III of this Protocol, and, if so, whether it intends:

(a) to use the hydrodynamic yield measurement method, in accordance with Section V of this Protocol;

(b) to use the seismic yield measurement method, in accordance with Section VI of this Protocol; and

(c) to carry out on-site inspection, in accordance with Section VII of this Protocol.

6. Within 30 days following notification by the Verifying Party, in accordance with paragraph 11 of Section XI of this Protocol, that it requires a reference test for a test of non-standard configuration, the Testing Party shall notify the Verifying Party whether it will meet the requirement for a reference test through:

(a) the identification of a previously conducted reference test;

(b) the identification of a previously conducted test of standard configuration, meeting the requirements for a reference test, with respect to which the Verifying Party carried out hydrodynamic yield measurements;

(c) the identification of a previously notified test of standard configuration, meeting the requirements for a reference test, with respect to which the Verifying Party has notified the Testing Party of its intent to carry out hydrodynamic yield measurements; or

(d) the conduct of a reference test within 12 months of the non-standard test, whose identification as a reference test will be made in the notification, in accordance with paragraph 4(j) of this Section.

7. If the Verifying Party notifies the Testing Party that it intends to use the hydrodynamic yield measurement method, the Testing Party shall provide the Verifying Party, no less than 120 days prior to the planned date of the test, with the following information:

(a) a description of the geological and geophysical characteristics of the test location, which shall include: the depth of the water table; the stratigraphic column, including the lithologic description of each formation; the estimated physical parameters of the rock, including bulk density, grain density, compressional velocity, porosity, and total water content; and information on any known geophysical discontinuities in the media within each hydrodynamic measurement zone;

(b) the planned cross-sectional dimensions of each emplacement hole in each hydrodynamic measurement zone;

(c) the location and configuration of any known voids larger than one cubic meter within each hydrodynamic measurement zone;

(d) a description of materials, including their densities, to be used to stem each emplacement hole within each hydrodynamic measurement zone;

(e) whether it is planned that each emplacement hole will be fully or partially cased, and, if so, a description of materials of this casing;

(f) whether it is planned that each satellite hole will be fully or partially cased, and, if so, a description of materials of this casing;

(g) a topographic map to a scale no smaller than 1:25,000 and a contour interval of 10 meters or less showing:

(i) an area with a radius of no less than two kilometers centered on the entrance to each emplacement hole, that shall include the area delineated by a circle having a radius of 300 meters centered directly above the planned emplacement point of each explosive canister; and

(ii) a one-kilometer wide corridor centered on the planned location of the above-ground cables of the Verifying Party;

(h) overall drawings showing the external dimensions of each explosive canister and each choke section, and any pipes or cableways passing through a choke section, as well as any other pipes and cableways connected to that explosive canister and located within five meters of that explosive canister;

(i) the specific locations, referenced to the entrance to each vertical satellite hole or to the surface location of the entrance to each horizontal emplacement hole, at which individual gas-blocking devices shall be installed if such devices are used on the electrical cables specified in paragraphs 3(a) and 3(b) of Section VIII of this Protocol; and

(j) whether the Testing Party will provide satellite communications as specified in paragraph 13 of Section X of this Protocol for use by Designated Personnel.

8. If the Verifying Party notifies the Testing Party that it intends to use the seismic yield measurement method, the Testing Party shall provide the Verifying Party, no less than 120 days prior to the planned date of the test, with the information specified in paragraphs 9(a), 9(b), and 9(c) of this Section.

9. If the Verifying Party notifies the Testing Party that it intends to carry out on-site inspection, the Testing Party shall provide the Verifying Party, no less than 120 days prior to the planned date of the test, with the following information:

(a) a description of the geological and geophysical characteristics of the test location, which shall include: the depth of the water table; the stratigraphic column, including the lithologic description of each formation; the estimated physical parameters of the rock, including bulk density, grain density, compressional velocity, porosity, and total water content; and information on any known geophysical discontinuities in the media within a radius of 300 meters of the planned emplacement point of each explosive canister;

(b) the planned cross-sectional dimensions of each emplacement hole in the portion within 300 meters of the planned emplacement point of each explosive canister;

(c) the location and configuration of any known voids larger than 1000 cubic meters within a radius of

300 meters of the planned emplacement point of each explosive canister;

(d) whether it is planned that each emplacement hole will be fully or partially cased, and, if so, a description of materials of this casing;

(e) a topographic map to a scale no smaller than 1:25,000 and a contour interval of 10 meters or less showing an area with a radius of no less than two kilometers centered on the entrance to each emplacement hole, that shall include the area delineated by a circle having a radius of 300 meters centered directly above the planned emplacement point of each explosive canister; and

(f) whether the Testing Party will provide satellite communications as specified in paragraph 13 of Section X of this Protocol for use by Designated Personnel.

10. The Testing Party shall immediately notify the Verifying Party of any change in any information provided in accordance with paragraph 2, 3, 4(a), 4(c), 4(d), 4(e), 4(f) or 4(j) of this Section, and:

(a) if the Verifying Party has notified the Testing Party that it intends to carry out activities related to verification in accordance with Section V of this Protocol, of any change in any information provided in accordance with paragraph 4(b), 4(g), 4(h), 4(i), 6 or 7 of this Section, or paragraph 10 of Section XI of this Protocol;

(b) if the Verifying Party has notified the Testing Party that it intends to carry out activities related to verification in accordance with Section VI of this Protocol, of any change in any information provided in accordance with paragraph 4(g), 4(h) or 8 of this Section; and

(c) if the Verifying Party has notified the Testing Party that it intends to carry out activities related to verification in accordance with Section VII of this Protocol, of any change in any information provided in accordance with paragraph 4(b), 4(g), 4(h) or 9 of this Section, or paragraph 10(a) of Section XI of this Protocol.

11. If the Testing Party makes changes in the information specified in paragraph 4(a), 10(a), 10(b) or 10(c) of this Section related to a specific test for which Designated Personnel are present in the territory of the

Testing Party, it shall also immediately notify, in writing, the Designated Personnel Team Leader carrying out activities related to verification of that test at the test site and at each Designated Seismic Station of such changes.

12. The Testing Party shall immediately inform the Verifying Party of any change in the timing of its operations related to the conduct of a specific test that affects the coordinated schedule, and if Designated Personnel are present in the territory of the Testing Party, it shall also immediately notify, in writing, the Designated Personnel Team Leader carrying out activities related to verification of that test at the test site and at each Designated Seismic Station.

13. If, in carrying out activities related to verification of a specific test, Designated Personnel are present at the test site or any Designated Seismic Station:

(a) no less than 48 hours prior to the initial planned time of the test, the Testing Party shall notify each Designated Personnel Team Leader, in writing, of the time for beginning the period of readiness for the test and the planned time of the test, to the nearest second. This and all subsequent notifications shall be referenced to Universal Time Coordinated and to local time at the test site or the Designated Seismic Station;

(b) except as otherwise provided in this Section, if the Testing Party changes the planned time of the test, it shall immediately notify each Designated Personnel Team Leader, in writing, of the new planned time of the test;

(c) the Testing Party shall conduct the test only within a period of readiness;

(d) unless the Parties otherwise agree, the period of readiness shall begin:

(i) no less than six days following completion of stemming of the hydrodynamic measurement zone of all satellite holes, if verification activities in accordance with Section V of this Protocol are carried out; and

(ii) no more than five days prior to the planned date of the test, if verification activities in accordance with Section VI of this Protocol are carried out;

(e) the Testing Party may terminate the period of readiness at any time. The Testing Party shall then immediately notify each Designated Personnel Team Leader, in writing, that the period of readiness has been terminated; and

(f) if the Testing Party terminates the period of readiness or changes the time for beginning the period of readiness, it shall provide notice of the time for beginning a new period of readiness to each Designated Personnel Team Leader, in writing, no less than 12 hours prior to beginning this new period of readiness.

14. Following notification in accordance with paragraph 13(a) or 13(b) of this Section, the Testing Party, without further notification, may advance the time of the test by no more than five minutes.

15. After the event readiness signal specified in paragraph 10(b) of Section V of this Protocol has been started:

(a) if the Testing Party delays the test and terminates the event readiness signal at least one second prior to the planned time of the test, it may carry out the test, without further notification, at any time within no more than 60 minutes after the planned time of the test, provided it generates a new event readiness signal; and

(b) if the Testing Party subsequently delays the test without ending the event readiness signal at least one second prior to the planned time of the test, the Testing Party shall end the event readiness signal and shall not begin a new event readiness signal within 20 minutes following that planned time of the test. The Testing Party shall notify each Designated Personnel Team Leader, in writing, of the new planned time of the test, at least 10 minutes prior to the beginning of the new event readiness signal for that test.

16. Following notification in accordance with paragraph 13(a) or 13(b) of this Section, if the test is delayed by more than 60 minutes the Testing Party shall notify each Designated Personnel Team Leader, in writing, of the new planned time of the test no less than 30 minutes prior to the new planned time of the test.

17. During the period of readiness, if a test is delayed by more than three hours from the last notification of the planned time of the test, the Testing Party shall notify each Designated Personnel Team Leader, in writing, of the period during which the test will not be conducted.

18. No less than one hour following the test, the Testing Party shall notify each Designated Personnel Team Leader, in writing, of the actual time of the test to the nearest 0.1 second.

19. For each test for which notification has been provided in accordance with paragraph 4 of this Section, no less than 48 hours prior to the initial planned time of the test, the Testing Party shall notify the Verifying Party of the planned time of the test to the nearest one second. If the Testing Party subsequently delays the planned time of the test by more than 24 hours, it shall immediately notify the Verifying Party of the new planned time of the test to the nearest one second. No less than three days following the test, the Testing Party shall notify the Verifying Party of the actual time of the test, referenced to Universal Time Coordinated, to the nearest 0.1 second.

20. The Testing Party shall immediately notify the Verifying Party of a change in the location of a test by more than one minute of latitude or longitude or of a change in the planned yield of a test from 50 kilotons or less to a planned yield exceeding 50 kilotons. The Verifying Party shall notify the Testing Party, within 20 days following receipt of notification of such a change in the location or planned yield of the test, whether it intends to carry out for this test any activities related to verification in accordance with paragraph 9 of Section III of this Protocol. If the Verifying Party, in this revised notification, notifies the Testing Party that it intends to carry out any of the activities related to verification that it has a right to carry out in accordance with Section III of this Protocol, the Testing Party shall provide the Verifying Party with the information that it is required to provide in accordance with paragraphs 7, 8, and 9 of this Section and paragraph 10 of Section XI of this Protocol.

21. If the Verifying Party has notified the Testing Party that it intends to use the hydrodynamic yield measurement method, the beginning of emplacement of sensing elements and cables shall not occur less than 90 days after notification of any change in the location of the test by more than one minute of latitude or longitude, unless the Parties otherwise agree.

22. If the Verifying Party has notified the Testing Party that it does not intend to carry out hydrodynamic yield measurements for a specific test, the Testing Party shall have the right to change the configuration of that test from standard to non-standard or vice versa, without notifying the Verifying Party of such change.

23. If the Verifying Party has notified the Testing Party that it intends to carry out hydrodynamic yield measurements for a specific test, the Testing Party shall immediately notify the Verifying Party of a change in the configuration of that test from standard to non-standard, or vice versa, or of any increase in the number of emplacement holes or explosive canisters of the test. The Verifying Party shall, within five days of notification of any such change, notify the Testing Party whether it will revise its initial notification and whether it deems that this change would either preclude or significantly limit the exercise of its rights provided in this Protocol. If so, the Coordinating Group shall immediately meet to consider a revision in the coordinated schedule that will ensure the rights of both Parties provided in this Protocol. If the Parties cannot agree on a revised coordinated schedule within 15 days following notification by the Testing Party of such a change, the date of notification of the change shall be deemed the initial notification of a test in accordance with paragraph 4 of this Section, and the test shall be conducted no less than 180 days following the date of notification of the change.

24. If the Verifying Party has notified the Testing Party that it intends to carry out on-site inspection with respect to a specific test, and if the Testing Party notifies the Verifying Party of an increase in the number of explosive canisters or an increase in the number of emplacement holes, the Verifying Party shall, within five days of notification of any such change, notify the Testing Party whether it deems that this change would significantly limit the exercise of its rights provided in this Protocol. If so, the Coordinating Group shall immediately meet to consider a revision in the coordinated schedule that will ensure the rights of both Parties provided in this Protocol. If the Parties cannot agree on a revised coordinated schedule within 15 days following notification by the Verifying Party that it deems that, as a result of such an increase, its rights would be significantly limited, the date of that notification shall be deemed notification by the Verifying Party that it intends to carry out on-site inspection in accordance with paragraph 5 of this Section, and the test shall be conducted no less than 165 days following the date of such notification.

25. The Verifying Party may at any time, but no later than one year following the test, request from the Testing Party clarification of any point of information provided in accordance with this Section. Such clarification shall be provided in the shortest possible time, but no later than 30 days following receipt of the request.

SECTION V. HYDRODYNAMIC YIELD MEASUREMENT METHOD

1. The hydrodynamic measurement zone is:

(a) with respect to a test of standard configuration, described in paragraph 2 or 3 of this Section, as well as with respect to any explosion having a planned yield of 50 kilotons or less:

(i) if an emplacement hole is vertical, the cylindrical region 25 meters in diameter whose axis is midway between the axes of the emplacement hole and the satellite hole, extending from a point 30 meters below the end of the emplacement hole to a point 100 meters from the end of the emplacement hole in the direction of the entrance to the emplacement hole; or

(ii) if an emplacement hole is horizontal, the cylindrical region 25 meters in diameter whose axis is midway between the axes of the emplacement hole and the satellite hole, extending from a point 15 meters beyond the end of the emplacement hole to a point 65 meters from the end of the emplacement hole in the direction of the entrance to the emplacement hole; and

(b) with respect to a test of non-standard configuration having a planned yield exceeding 50 kilotons:

(i) if an emplacement hole is vertical, the cylindrical region 200 meters in diameter coaxial with the emplacement hole, extending from a point 30 meters below the end of the emplacement hole to a point 100 meters from the center point of the explosive canister in the direction of the entrance to the emplacement hole; or

(ii) if an emplacement hole is horizontal, the cylindrical region 130 meters in diameter whose axis is coaxial with the emplacement hole, extending from a point 15 meters beyond the end of the emplacement hole to a point 65 meters from the center point of the explosive canister in the direction of the entrance to the emplacement hole.

2. For the purposes of the use of the hydrodynamic yield measurement method, a test shall be deemed of standard vertical configuration if:

(a) each emplacement hole is vertical and cylindrical, and is drilled or excavated with a diameter no greater than four meters;

(b) the bottom of each emplacement hole is filled with stemming material having a bulk density no less than 60 percent of the average density of the surrounding rock, to form a plug no less than three meters thick, and the top of this plug of stemming material is the end of the emplacement hole for the explosive canister emplaced farthest from the entrance to the emplacement hole;

(c) any pipe or cableway connected to an explosive canister passes through a choke section. This choke section is installed on the top of the explosive canister and has the following characteristics:

(i) the diameter of the choke section is no less than that of the explosive canister;

(ii) the choke section is no less than one meter thick;

(iii) the sum of the areas of all pipes and cableways within the choke section does not exceed 0.5 square meters;

(iv) the area of each pipe or cableway within the choke section does not exceed 0.3 square meters;

(v) the part of the choke section in contact with the explosive canister consists of a steel plate having a thickness no less than 0.005 meters; and

(vi) the choke section, except for pipes and cableways, is filled, prior to emplacement, with stemming material having a bulk density no less than 60 percent of the average density of the surrounding rock, and has a product of density and thickness no less than 250 grams per square centimeter;

(d) the length of each explosive canister does not exceed 12 meters and, after an explosive canister is emplaced, the lowest part of the choke section is no more than 12 meters above the end of the emplacement hole;

(e) the diameter of each explosive canister does not exceed three meters;

(f) each emplacement hole has been drilled or excavated with a diameter, within each hydrodynamic measurement zone, no more than one meter greater than the diameter of each explosive canister; or, if an emplacement hole has been cased, the inside diameter of the casing, within each hydrodynamic measurement zone, is no more than one meter greater than the diameter of each explosive canister. Within the 15-meter segment above the end of each emplacement hole for each explosive canister, no washouts penetrate more than one meter into the wall of the emplacement hole;

(g) all voids in or connected to an emplacement hole, within each hydrodynamic measurement zone, external to:

(i) any explosive canister;

(ii) any choke sections;

(iii) any diagnostic canisters; and

(iv) associated cables and pipes

are filled with stemming material having a bulk density no less than 60 percent of the average density of the surrounding rock;

(h) within each hydrodynamic measurement zone, all voids greater than 10 cubic meters, external and unconnected to an emplacement hole or a satellite hole, and all voids greater than one cubic meter, within two meters of the wall of a satellite hole or any part of an explosive canister, are filled with stemming material having a bulk density no less than 70 percent of the average density of the surrounding rock; and

(i) within each hydrodynamic measurement zone, the distance between a satellite hole and any other drilled hole or excavation is no less than the distance between that satellite hole and the emplacement hole with which it is associated.

3. For the purposes of the use of the hydrodynamic yield measurement method, a test shall be deemed of standard horizontal configuration if:

(a) each emplacement hole is horizontal, with an excavated cross section, measured in the plane perpendicular to its axis, no greater than five meters by five meters for the first 65 meters from the end of the emplacement hole for each explosive canister, except that any diagnostic canister associated with it shall occupy, in an emplacement hole, space having a cross section no greater than 3.5 meters by 3.5 meters for the first 50 meters of the emplacement hole from the choke section of each explosive canister in the direction of the entrance to the emplacement hole;

(b) the end of each emplacement hole is either:

(i) unsupported native rock, the surface of which is essentially perpendicular to the axis of the emplacement hole; or

(ii) the surface of a plug no less than three meters thick, formed of stemming material having a bulk density no less than 60 percent of the average density of the surrounding rock;

(c) the length of each explosive canister does not exceed 12 meters and, after it is emplaced, the end of the explosive canister farthest from the entrance to the emplacement hole is no less than one meter and no more than two meters from the end of the emplacement hole;

(d) the cross section of each explosive canister measured in the plane perpendicular to the axis of the emplacement hole does not exceed three meters by three meters;

(e) any pipe or cableway connected to an explosive canister and lying entirely within the emplacement hole passes through a choke section. This choke section is installed at the end of the explosive canister nearest to the entrance of the emplacement hole and has the following characteristics:

(i) the dimensions of the choke section perpendicular to the axis of the emplacement hole are no less than those of the explosive canister;

(ii) the choke section is no less than one meter thick;

(iii) the sum of the areas of all pipes and cableways within the choke section, plus the sum of the areas of pipes and cableways specified in subparagraph (f) of this paragraph, does not exceed 0.5 square meters;

(iv) the area of each pipe or cableway within the choke section does not exceed 0.3 square meters; and

(v) the choke section, except for pipes and cableways meeting the requirements of subparagraphs (e)(iii) and (e)(iv) of this paragraph, is filled with stemming material having a bulk density no less than 60 percent of the average density of the surrounding rock, and has a product of density and thickness no less than 250 grams per square centimeter;

(f) any pipe or cableway connected to any surface of an explosive canister and not lying entirely within the emplacement hole has the following characteristics:

(i) the area of each pipe or cableway within five meters of the explosive canister does not exceed 0.05 square meters; and

(ii) the sum of the areas of all such pipes and cableways within five meters of the explosive canister does not exceed 0.1 square meters;

(g) any diagnostic canister connected to the pipes or cableways specified in subparagraph (f) of this paragraph lies entirely outside the hydrodynamic measurement zone;

(h) all voids in or connected to an emplacement hole, including any bypass or access tunnels within the hydrodynamic measurement zone, external to:

(i) any explosive canister;

(ii) any choke sections;

(iii) any diagnostic canisters; and

(iv) associated cables and pipes

are filled with stemming material having a bulk density no less than 60 percent of the average density of the surrounding rock;

(i) within each hydrodynamic measurement zone, all voids greater than 10 cubic meters, external and unconnected to an emplacement hole or a satellite hole, and all voids greater than one cubic meter, within two meters of the wall of a satellite hole or any part of an explosive canister, are filled with stemming material having a bulk density no less than 70 percent of the average density of the surrounding rock; and

(j) within the portion of each hydrodynamic measurement zone extending from the end of the emplacement hole in the direction of the entrance to the emplacement hole, the distance between a satellite hole and any other tunnel or excavation is no less than the distance between that satellite hole and the emplacement hole with which it is associated.

4. With respect to a test of standard configuration, as well as with respect to any explosion having a planned yield of 50 kilotons or less:

(a) personnel of the Testing Party, using their own equipment, shall drill or excavate a satellite hole associated with each emplacement hole, at a time of their own choosing. The Testing Party shall have the right to complete drilling or excavation of a satellite hole for a specific test prior to the arrival of Designated Personnel at the test site to carry out activities related to use of the hydrodynamic yield measurement method for that test. Each satellite hole shall meet the following requirements:

(i) if an emplacement hole is vertical, the axis of the associated satellite hole shall be located 11 meters, plus or minus three meters, from the axis of the emplacement hole within each hydrodynamic measurement zone. If an emplacement hole is horizontal, the axis of the associated satellite hole shall be located 11 meters, plus or minus two meters, from the axis of the emplacement hole within each hydrodynamic measurement zone, and it may be drilled or excavated either as a single continuous hole or in separate consecutive segments associated with each hydrodynamic measurement zone. The axis of any satellite hole shall be no less than six meters from the wall of any drilled or excavated cavity or hole;

(ii) its end shall be no less than 30 meters below the level of the end of the associated vertical emplacement hole farthest from the entrance to the emplacement hole, or no less than 15 meters beyond the point at which the satellite hole is closest to the end of the associated horizontal emplacement hole farthest from the entrance to the emplacement hole;

(iii) if it is prepared by drilling, it shall be drilled no less than 0.3 meters and no more than 0.5 meters in diameter. Within each hydrodynamic measurement zone, no washouts shall penetrate more than one meter into the wall of the hole; and

(iv) if it is prepared by excavation, it shall have an excavated cross section, measured in the plane perpendicular to its axis, no greater than 2.5 meters by 2.5 meters within each hydrodynamic measurement zone;

(b) Designated Personnel shall have the right to observe the activities of the personnel of the Testing Party carried out to meet the specifications set forth in paragraph 2(b) of this Section and, if applicable, set forth in paragraph 3(b)(ii) of this Section. A representative sample of no less than 1000 cubic centimeters in volume of the stemming material used to form the plugs specified in paragraphs 2(b) and 3(b)(ii) of this Section shall be provided to Designated Personnel for retention;

(c) Designated Personnel shall have the right to carry out, under observation of personnel of the Testing Party and with their assistance, if such assistance is requested by Designated Personnel, directional surveys and geodetic measurements of each satellite hole and emplacement hole prior to the planned date of the beginning of emplacement of sensing elements and cables;

(d) equipment specified in paragraph 3 of Section VIII of this Protocol shall be operated by Designated Personnel and shall be installed, in accordance with installation instructions provided in accordance with paragraph 6(c) of Section VIII of this Protocol, by Designated Personnel under observation of personnel of the Testing Party and with their assistance, if such assistance is requested by Designated Personnel. The location of each hydrodynamic recording facility and the command and monitoring facility of the Verifying Party and the instrumentation facility of the Testing Party specified in paragraph 10(1) of this Section shall be determined by the Testing Party in consultation with the Verifying Party in the Coordinating Group no less than 90 days prior to the beginning of emplacement of sensing elements and cables. Areas for the installation of these facilities, cable supports, and cableways for protection of cables of the Verifying Party, specified in paragraphs 3(b), 3(f), and 3(g) of Section VIII of this Protocol, shall be prepared by the Testing Party in accordance with requirements agreed upon in the Coordinating Group. Only cables of the Verifying Party shall be installed in these cableways. Designated Personnel shall have access, under observation of personnel of the Testing Party, to the cables specified in paragraphs 3(f) and 3(g) of Section VIII of this Protocol and to the cableways in which they are installed, at all times. Personnel of the Testing Party shall have access to these cableways only under observation of Designated Personnel;

(e) Designated Personnel shall have the right to use their own primary electrical power sources to supply electrical power to hydrodynamic equipment specified in paragraph 3 of Section VIII of this Protocol. At the request of the Verifying Party, the Testing Party shall supply electrical power from the standard electrical network of its test site through converters provided by the Verifying Party or, by agreement of the Parties, by the Testing Party;

(f) for each test, the only equipment installed in a satellite hole shall be that of the Verifying Party specified in paragraphs 3(a) and 3(h) of Section VIII of this Protocol. If an emplacement hole is vertical, the end point of the equipment farthest from the entrance to the satellite hole shall be installed no less than 30 meters below the level of the end of the emplacement hole farthest from the entrance to the emplacement hole. If an emplacement hole is horizontal, the end point of this equipment shall be installed no less than 15 meters beyond the point at which a satellite hole is closest to the end of the emplacement hole farthest from the entrance to the emplacement hole. For each satellite hole, Designated Personnel shall have the right to install no more than six sensing elements and cables, without regard to the number of switches. Personnel of each Party shall have the right to measure the location of the installed sensing elements and cables;

(g) Designated Personnel shall have the right to conduct a final directional survey and geodetic measurements of each satellite hole upon completion of installation of sensing elements and cables;

(h) personnel of the Testing Party, under observation of Designated Personnel, shall fill all voids in or connected to each satellite hole within each hydrodynamic measurement zone with a stemming material agreed upon by the Parties, having a bulk density no less than 70 percent of the average density of the surrounding rock. A representative sample of no less than 1000 cubic centimeters in volume of each stemming material used in each hydrodynamic measurement zone shall be provided to Designated Personnel for retention. The methods and materials used for stemming satellite holes and any hydrodynamic measurement equipment emplacement pipe shall:

(i) be consistent with the containment practices of the Testing Party;

(ii) be chosen to minimize voids around sensing elements and cables; and

(iii) be chosen to avoid damage to the sensing elements and cables;

(i) Designated Personnel shall have the right to observe the stemming of the hydrodynamic measurement zones of each emplacement hole in accordance with paragraphs 2(g) and 3(h) of this Section. A representative sample of no less than 1000 cubic centimeters in volume of each stemming material used in each hydrodynamic measurement zone shall be provided to Designated Personnel for retention;

(j) the Testing Party shall have the right to case or line each emplacement hole; and

(k) the Testing Party shall have the right to case or line each satellite hole, provided that:

(i) sensing elements and cables can be installed as specified in subparagraph (f) of this paragraph;

(ii) casing or lining material in each hydrodynamic measurement zone is agreed upon by the Parties; and

(iii) casing or lining in each hydrodynamic measurement zone is affixed to the surrounding formation with material agreed upon by the Parties.

5. In preparation for the use of the hydrodynamic yield measurement method with respect to a test of standard configuration, as well as with respect to any explosion having a planned yield of 50 kilotons or less:

(a) upon their arrival at the test site, no less than 10 days prior to the planned date of the beginning of emplacement of sensing elements and cables, Designated Personnel shall provide the Testing Party with a description of the recording format and the computer program, to enable the Testing Party to read digital data if digital recordings of hydrodynamic data will be made by Designated Personnel;

(b) the Testing Party shall provide Designated Personnel upon their arrival at the test site with the results of any studies of core samples and rock fragments extracted from each emplacement hole and satellite hole and any exploratory holes and tunnels, and the results of logging and geodetic measurements carried out in each emplacement hole, each satellite hole, and any exploratory holes and tunnels, relevant to the geology and geophysics of each hydrodynamic measurement zone, if the Testing Party carried out such studies and measurements;

(c) using their own equipment and under observation of personnel of the Testing Party, Designated Personnel shall have the right to carry out:

(i) if an emplacement hole is vertical, in the emplacement hole and associated satellite hole, caliper logs, directional surveys, geodetic measurements, and depth or distance measurements to determine the dimensions and the relative locations of the emplacement hole and satellite hole, as well as measurements to determine the location and volume of all voids within each hydrodynamic measurement zone, using, in a non-destructive way, such methods as electromagnetic measurements, radar, and acoustic sounding;

(ii) if an emplacement hole is vertical, within the hydrodynamic measurement zones of either the emplacement hole or, at the option of the Testing Party, of the satellite hole, gamma-gamma, gamma, neutron, electrical resistivity, magnetic susceptibility, gravity, acoustic, and television logging;

(iii) if an emplacement hole is horizontal, in the emplacement hole and associated satellite hole, as well as in the drilled holes specified in subparagraph (e)(ii) of this paragraph, caliper logs, directional surveys, geodetic measurements, and distance measurements to determine the dimensions and relative location of these holes, as well as measurements to determine the location and volume of all voids within each hydrodynamic measurement zone using, in a non-destructive way, such methods as electromagnetic measurements, radar, and acoustic sounding; and

(iv) if an emplacement hole is horizontal, in the drilled holes specified in subparagraph (e)(ii) of this paragraph, and within the hydrodynamic measurement zones of the emplacement hole, or, at the option of the Testing Party, of the satellite hole, gamma-gamma, gamma, neutron, electrical resistivity, magnetic susceptibility, gravity, and acoustic logging;

(d) all logging data and geometrical measurements obtained by Designated Personnel, in accordance with subparagraph (c) of this paragraph, including calibration data, shall be duplicated, and a copy of the data shall be provided to personnel of the Testing Party prior to departure from the test site of Designated Personnel who have carried out these measurements. Calibration data shall include information necessary to confirm the sensitivity of logging equipment under the conditions in which it is used;

(e) Designated Personnel shall have the right to receive:

(i) if an emplacement hole is vertical, core samples or, at the option of Designated Personnel, rock fragments from the emplacement hole or, at the option of the Testing Party, from the satellite hole, extracted at no more than 10 depths within each hydrodynamic measurement zone, specified by Designated Personnel. The total volume of core samples or rock fragments extracted at each depth shall be no less than 400 cubic centimeters and no more than 3000 cubic centimeters, unless the Parties otherwise agree; and

(ii) if an emplacement hole is horizontal, core samples or, at the option of Designated Personnel, rock fragments from the emplacement hole or, at the option of the Testing Party, the satellite hole within each hydrodynamic measurement zone. If core samples are extracted from the emplacement hole or, at the option of the Testing Party, from an excavated satellite hole, they shall be extracted during drilling from each of no more than 10 holes drilled at stations specified by Designated Personnel. The diameter of each drilled hole shall be no less than 0.09 meters and no more than 0.15 meters, and the depth of each hole shall be no more than the diameter of the emplacement hole or satellite hole at this station. Core samples shall be extracted at locations specified by Designated Personnel along each drilled hole. If core samples are extracted from a drilled satellite hole, they shall be extracted by personnel of the Testing Party during the drilling of the satellite hole, within each hydrodynamic measurement zone, at no more than 10 stations specified by Designated Personnel and under their observation. Rock fragments shall be extracted from the emplacement hole or an excavated satellite hole at each of no more than 10 stations specified by Designated Personnel. Core samples and rock fragments may be taken from no more than a total of 10 stations. If an emplacement hole or an excavated satellite hole is lined at any station specified by Designated Personnel for extracting core samples or rock fragments, personnel of the Testing Party shall enable Designated Personnel to extract core samples or rock fragments at such a station from native rock. The total volume of core samples or rock fragments extracted at each station shall be no less than 400 cubic centimeters and no more than 3000 cubic centimeters, unless the Parties otherwise agree;

(f) core samples or rock fragments may be extracted in accordance with subparagraph (e) of this paragraph by personnel of the Testing Party, under observation of Designated Personnel, or by Designated Personnel, at the option of the Testing Party;

(g) if personnel of the Testing Party do not extract core samples or rock fragments in accordance with subparagraph (e) of this paragraph, Designated Personnel shall have the right, using their own equipment, to extract such core samples or rock fragments in accordance with subparagraph (e) of this paragraph, under observation of personnel of the Testing Party;

(h) if an emplacement hole is vertical, and if the Testing Party, prior to arrival of Designated Personnel at the test site:

(i) has cased a total of 20 meters or more of the emplacement hole or the satellite hole within any hydrodynamic measurement zone, Designated Personnel shall have the right to carry out, in the uncased hole, the activities specified in subparagraph (c)(ii) of this paragraph and to receive core samples or rock fragments from the uncased hole, extracted in accordance with subparagraphs (e), (f), and (g) of this paragraph; or

(ii) has cased a total of 20 meters or more of both the emplacement hole and the satellite hole within any hydrodynamic measurement zone, the Testing Party shall provide an uncased hole with respect to which Designated Personnel shall have the same rights as those specified for the emplacement hole and the satellite hole in subparagraphs (c), (e), (f), and (g) of this paragraph. The axis of this uncased hole shall be within 22 meters of the axes of the emplacement hole and the satellite hole within each hydrodynamic measurement zone. If personnel of the Testing Party, under observation of Designated Personnel, extract core samples through coring during the drilling of this uncased hole, the diameter of the hole

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shall be no less than 0.09 meters. If Designated Personnel, under observation of personnel of the Testing Party, extract core samples from this uncased hole following drilling, the diameter of the uncased hole shall be no less than 0.3 meters;

(i) Designated Personnel shall have the right to retain core samples and rock fragments specified in subparagraphs (e), (f), (g), and (h) of this paragraph. Any such core samples or rock fragments shall be prepared in accordance with procedures agreed upon by the Parties for shipment to the territory of the Verifying Party; and

(j) logging, directional surveys, geodetic measurements, and extracting of core samples or rock fragments carried out in accordance with subparagraphs (c), (e), (f), (g), (h), and (i) of this paragraph shall begin at times chosen by the Testing Party and specified in the coordinated schedule. Designated Personnel shall have the right, within a period not to exceed 21 days, to carry out logging, directional surveys, geodetic measurements, and coring activities, unless the Parties otherwise agree and so specify in the coordinated schedule. The Testing Party shall not emplace any explosive until the activities specified in this paragraph have been completed.

6. With respect to any explosion having a planned yield exceeding 50 kilotons and characteristics differing from those set forth in paragraph 2 or 3 of this Section with respect to a test of standard configuration:

(a) personnel of the Testing Party, using their own equipment and at a time of their own choosing, shall drill or excavate up to three satellite holes associated with the emplacement hole. The location of the satellite holes shall be determined in accordance with paragraph 11(b)(i) of Section XI of this Protocol. The Testing Party shall have the right to complete drilling or excavation of satellite holes for the specific test prior to the arrival of Designated Personnel at the test site for that test. The satellite holes shall meet the following requirements:

(i) with respect to the first satellite hole, its length shall be as specified in paragraph 4(a)(ii) of this Section;

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(ii) with respect to the second and third satellite holes, if such are required by the Verifying Party, the axis of each satellite hole shall be within three meters of the axis specified by the Verifying Party. Its length shall be specified by the Verifying Party and in no case shall it extend beyond the hydrodynamic measurement zone associated with that explosion;

(iii) within each hydrodynamic measurement zone, the axis of each satellite hole shall be essentially parallel to the axis of the emplacement hole, if the emplacement hole is vertical, or shall be essentially straight, if the emplacement hole is horizontal. Within each hydrodynamic measurement zone, its axis shall be no less than eight meters from the axis of the emplacement hole, if the emplacement hole is vertical, or no less than 10 meters from the axis of the emplacement hole, if the emplacement hole is horizontal, and no less than six meters from the wall of any drilled or excavated cavity or hole;

(iv) with respect to a drilled satellite hole, it shall be drilled no less than 0.3 meters and no more than 0.5 meters in diameter, unless the Parties otherwise agree. Within each hydrodynamic measurement zone, no washouts shall penetrate more than one meter into the wall of the hole;

(v) with respect to an excavated satellite hole, it shall have a cross section, measured in the plane perpendicular to its axis, no greater than 2.5 meters by 2.5 meters within each hydrodynamic measurement zone; and

(vi) within each hydrodynamic measurement zone, except for any drilled or excavated cavity or hole, all voids, external and unconnected to any satellite hole, greater than 10 cubic meters in volume, within six meters of the axis of any satellite hole, and all voids greater than one cubic meter in volume, within two meters of the axis of any satellite hole, shall be filled with stemming material having a bulk density no less than 70 percent of the average density of the surrounding rock;

(b) Designated Personnel shall have the right to carry out, under observation of personnel of the Testing Party and with their assistance, if such assistance is requested by Designated Personnel, directional surveys and geodetic measurements of each satellite hole and emplacement hole prior to the beginning of emplacement of sensing elements and cables and transducers;

(c) equipment specified in paragraph 3 of Section VIII of this Protocol shall be operated by Designated Personnel and shall be installed, in accordance with installation instructions provided in accordance with paragraph 6(c) of Section VIII of this Protocol, by Designated Personnel under observation of personnel of the Testing Party and with their assistance, if such assistance is requested by Designated Personnel. The location of each hydrodynamic recording facility and the command and monitoring facility of the Verifying Party and the instrumentation facility of the Testing Party specified in paragraph 10(l) of this Section shall be determined by the Testing Party in consultation with the Verifying Party in the Coordinating Group no less than 90 days prior to the beginning of emplacement of sensing elements and cables. Areas for the installation of these facilities, cable supports, and cableways for protection of cables of the Verifying Party specified in paragraphs 3(b), 3(f), and 3(g) of Section VIII of this Protocol shall be prepared by the Testing Party in accordance with requirements agreed upon in the Coordinating Group. Only cables of the Verifying Party shall be installed in these cableways. Designated Personnel shall have access, under observation of personnel of the Testing Party, to the cables specified in paragraphs 3(f) and 3(g) of Section VIII of this Protocol and to the cableways in which they are installed, at all times. Personnel of the Testing Party shall have access to these cableways only under observation of Designated Personnel;

(d) Designated Personnel shall have the right to use their own primary electrical power sources to supply electrical power to hydrodynamic equipment specified in paragraph 3 of Section VIII of this Protocol. At the request of the Verifying Party, the Testing Party shall supply electrical power from the standard electrical network of its test site through converters provided by the Verifying Party or, upon agreement of the Parties, by the Testing Party;

(e) for each test, the only equipment installed in each satellite hole shall be that of the Verifying Party specified in paragraphs 3(a) and 3(h) of Section VIII of this Protocol. This equipment shall be installed in each satellite hole at the locations specified by Designated Personnel. Designated Personnel shall have the right to install in each satellite hole no more than six sensing elements and cables, without regard to the number of switches, and no more than six transducers together with no more than 14 cables for information transmission and power supply. The total number of cables in each satellite hole shall not exceed 20. Personnel of each Party shall have the right to measure the location of the installed sensing elements and cables and transducers;

(f) Designated Personnel shall have the right to conduct a final directional survey and geodetic measurements of each satellite hole upon completion of installation of sensing elements and cables and transducers;

(g) personnel of the Testing Party, under observation of Designated Personnel, shall fill all voids in or connected to each satellite hole within each hydrodynamic measurement zone with a stemming material agreed upon by the Parties, having a bulk density no less than 70 percent of the average density of the surrounding rock. A representative sample of no less than 1000 cubic centimeters in volume of each stemming material used in each hydrodynamic measurement zone shall be provided to Designated Personnel for retention. The methods and materials used for stemming satellite holes and any hydrodynamic measurement equipment emplacement pipe shall:

(i) be consistent with the containment practices of the Testing Party;

(ii) be chosen to minimize voids around sensing elements and cables and transducers; and

(iii) be chosen to avoid damage to the sensing elements and cables and transducers;

(h) Designated Personnel shall have the right to observe the stemming of the hydrodynamic measurement zones of each emplacement hole in accordance with paragraph 9(d) of this Section. A representative sample of no less than 1000 cubic centimeters in volume of each stemming material used in each hydrodynamic measurement zone shall be provided to Designated Personnel for retention;

(i) the Testing Party shall have the right to case or line each emplacement hole; and

(j) the Testing Party shall have the right to case or line each satellite hole, provided that:

(i) sensing elements and cables and transducers can be installed as specified in subparagraph (e) of this paragraph;

(ii) casing or lining material in each hydrodynamic measurement zone is agreed upon by the Parties; and

(iii) casing or lining in each hydrodynamic measurement zone is affixed to the surrounding formation with material agreed upon by the Parties.

7. In preparation for the use of the hydrodynamic yield measurement method with respect to any explosion having a planned yield exceeding 50 kilotons and characteristics differing from those set forth in paragraph 2 or 3 of this Section with respect to a test of standard configuration:

(a) upon their arrival at the test site, no less than 10 days prior to the planned date of the beginning of emplacement of sensing elements and cables and transducers, Designated Personnel shall provide the Testing Party with a description of the recording format and the computer program, to enable the Testing Party to read digital data if digital recordings of hydrodynamic data will be made by Designated Personnel;

(b) the Testing Party shall provide Designated Personnel upon their arrival at the test site with the results of any studies of core samples and rock fragments extracted from each emplacement hole and satellite hole and any exploratory holes and tunnels, and the results of logging and geodetic measurements carried out in each emplacement hole, each satellite hole, and any exploratory holes and tunnels, relevant to the geology and geophysics of each hydrodynamic measurement zone, if the Testing Party carried out such studies and measurements;

(c) using their own equipment and under observation of personnel of the Testing Party, Designated Personnel shall have the right to carry out:

(i) if an emplacement hole is vertical, in the emplacement hole and each associated satellite hole, caliper logs, directional surveys, geodetic measurements, and depth or distance measurements to determine the dimensions and the relative locations of the emplacement hole and each satellite hole, as well as measurements to determine the location and volume of all voids within each hydrodynamic measurement zone, using, in a non-destructive way, such methods as electromagnetic measurements, radar, and acoustic sounding;

(ii) if an emplacement hole is vertical, within the hydrodynamic measurement zones of the emplacement hole and each associated satellite hole, gamma-gamma, gamma, neutron, electrical resistivity, magnetic susceptibility, gravity, acoustic, and television logging;

(iii) if an emplacement hole is horizontal, in the emplacement hole and each associated satellite hole, as well as in the drilled holes specified in subparagraph (e)(ii) of this paragraph, caliper logs, directional surveys, geodetic measurements, and distance measurements to determine the dimensions and relative location of these holes, as well as measurements to determine the location and volume of all voids in each hydrodynamic measurement zone using, in a non-destructive way, such methods as electromagnetic measurements, radar, and acoustic sounding;

(iv) if an emplacement hole is horizontal, in the drilled holes specified in subparagraph (e)(ii) of this paragraph, and within the hydrodynamic measurement zones of the emplacement hole and each associated satellite hole, gamma-gamma, gamma, neutron, electrical resistivity, magnetic susceptibility, gravity, and acoustic logging; and

(v) magnetic surveys, in vertical satellite holes and drilled horizontal satellite holes, to obtain information necessary for the installation and positioning of transducers;

(d) all logging data and geometrical measurements obtained by Designated Personnel, in accordance with subparagraph (c) of this paragraph, including calibration data, shall be duplicated, and a copy of the data shall be provided to personnel of the Testing Party prior to departure from the test site of Designated Personnel who have carried out these measurements. Calibration data shall include information necessary to confirm the sensitivity of logging equipment under the conditions in which it is used;

(e) Designated Personnel shall have the right to receive:

(i) if an emplacement hole is vertical, core samples or, at the option of Designated Personnel, rock fragments from the emplacement hole and from each satellite hole, extracted at no more than 10 depths within each hydrodynamic measurement zone, specified by Designated Personnel. The total volume of core samples or rock fragments extracted at each depth shall be no less than 400 cubic centimeters and no more than 3000 cubic centimeters, unless the Parties otherwise agree; and

(ii) if an emplacement hole is horizontal, core samples or, at the option of Designated Personnel, rock fragments from the emplacement hole and each satellite hole within each hydrodynamic measurement zone. If core samples are extracted from the emplacement hole or an excavated satellite hole, they shall be extracted during drilling from each of no more than 10 holes drilled at stations specified by Designated Personnel. The diameter of each drilled hole shall be no less than 0.09 meters and no more than 0.15 meters, and the depth of each hole shall be no more than the diameter of the emplacement hole or satellite hole at this station. Core samples shall be extracted at locations specified by Designated Personnel along each drilled hole. If core samples are extracted from a drilled satellite hole, they shall be extracted by personnel of the Testing Party during the drilling of the satellite hole, within each hydrodynamic measurement zone, at no more than 10 stations specified by Designated Personnel and under their observation. Rock fragments shall be extracted from the emplacement hole or an excavated satellite hole at each of no more than 10 stations specified by Designated Personnel. Core samples and rock fragments may be taken from no more than a total of 10 stations for each hole. If an emplacement hole or an excavated satellite hole is lined at any station specified by Designated Personnel for extracting core samples or rock fragments, personnel of the Testing Party shall enable Designated Personnel to extract core samples or rock fragments at such a station from native rock. The total volume of core samples or rock fragments extracted at each station shall be no less than 400 cubic centimeters and no more than 3000 cubic centimeters, unless the Parties otherwise agree;

(f) core samples or rock fragments may be extracted in accordance with subparagraph (e) of this paragraph by personnel of the Testing Party, under observation of Designated Personnel, or by Designated Personnel, at the option of the Testing Party;

(g) if personnel of the Testing Party do not extract core samples or rock fragments in accordance with subparagraph (e) of this paragraph, Designated Personnel shall have the right, using their own equipment, to extract such core samples or rock fragments in accordance with subparagraph (e) of this paragraph, under observation of personnel of the Testing Party;

(h) if an emplacement hole is vertical, and if the Testing Party, prior to arrival of Designated Personnel at the test site, has cased a total of 20 meters or more of the emplacement hole or any satellite hole within any hydrodynamic measurement zone, and if within 22 meters from this cased hole there is no uncased hole with a diameter no less than 0.3 meters, the Testing Party shall provide an uncased hole for each hole so cased, with respect to which the Verifying Party shall have the same rights as those specified in subparagraphs (c), (e), (f), and (g) of this paragraph. Within each hydrodynamic measurement zone the axis of each uncased hole shall be no less than 11 and no more than 22 meters from such a cased hole. If personnel of the Testing

Party, under observation of Designated Personnel, extract core samples through coring during the drilling of this uncased hole, the diameter of the hole shall be no less than 0.09 meters. If Designated Personnel, under observation of personnel of the Testing Party, extract core samples from this uncased hole following drilling, the diameter of the uncased hole shall be no less than 0.3 meters;

(i) Designated Personnel shall have the right to retain core samples and rock fragments specified in subparagraphs (e), (f), (g), and (h) of this paragraph. Any such core samples or rock fragments shall be prepared in accordance with procedures agreed upon by the Parties for shipment to the territory of the Verifying Party; and

(j) logging, directional surveys, magnetic surveys, geodetic measurements, and extracting of core samples or rock fragments carried out in accordance with subparagraphs (c), (e), (f), (g), (h), and (i) of this paragraph shall begin at times chosen by the Testing Party and specified in the coordinated schedule. Designated Personnel shall have the right, within a period not to exceed 25 days, to carry out logging, directional surveys, magnetic surveys, geodetic measurements, and coring activities, unless the Parties otherwise agree and so specify in the coordinated schedule. The Testing Party shall not emplace any explosive until the activities specified in this paragraph have been completed.

8. If the Verifying Party has notified the Testing Party that it intends to use the hydrodynamic yield measurement method with respect to a test of non-standard configuration having a planned yield exceeding 50 kilotons, and that it requires a reference test in accordance with paragraph 7 of Section III of this Protocol, the Testing Party shall provide for such a reference test for the non-standard test. To serve as a reference test, a test shall:

(a) have a planned yield exceeding 50 kilotons;

(b) be of standard configuration;

(c) have a single explosive canister;

(d) meet the following spacing criteria:

(i) the horizontal separation between the emplacement point of the reference test and each emplacement point of the non-standard test at which any explosive canister or its emplacement conditions differ from those specified for a test of standard configuration shall be no less than 300 meters and no more than 2000 meters;

(ii) each explosive canister of the test of non-standard configuration and the explosive canister of the associated reference test shall all be emplaced above the water table or shall all be emplaced below the water table; and

(iii) the depth of all emplacement points of the test of non-standard configuration shall be within 150 meters of the depth of the emplacement point of its associated reference test; and

(e) be conducted either prior to, or within 12 months following, the conduct of the test of non-standard configuration for which it serves as a reference test.

9. Designated Personnel shall have the right:

(a) to have access along agreed routes to the location of the test to carry out activities related to use of the hydrodynamic yield measurement method;

(b) to have access to their equipment associated with the hydrodynamic yield measurement method from the time of its delivery to Designated Personnel at the test site, until it is transferred to personnel of the Testing Party in accordance with paragraph 7(i) of Section VIII of this Protocol, unless otherwise provided in this Protocol;

(c) with respect to a test of standard configuration, as well as with respect to any explosion having a planned yield of 50 kilotons or less:

(i) if an emplacement hole is vertical, prior to the lowering of the explosive canister into the emplacement hole, to confirm by direct measurement the external dimensions of each explosive canister; to inspect visually the entire external structure of that canister and the choke section; to confirm by direct

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measurement that the choke section conforms to the specifications set forth in paragraph 2(c) of this Section; to observe continuously the explosive canister and any choke section from the time inspections and measurements, carried out in accordance with this subparagraph, begin; to observe the emplacement of the explosive canister into the emplacement hole and stemming of the emplacement hole from the time the entire explosive canister is last visible above the entrance of the emplacement hole until completion of stemming of each hydrodynamic measurement zone of the emplacement hole; to determine by direct measurement the depth of emplacement of the bottom part of any choke section; and to observe the stemming of the entire satellite hole; and

(ii) if an emplacement hole is horizontal, following placement of explosive canisters in the emplacement hole, and prior to the beginning of stemming around explosive canisters, to confirm by direct measurement the external dimensions of each explosive canister; to inspect visually the entire external structure of each explosive canister; to confirm by direct measurement that each choke section conforms to the specifications set forth in paragraph 3(e) of this Section; to observe continuously each explosive canister and each choke section from the time inspections and measurements, carried out in accordance with this subparagraph, begin, until the completion of stemming around each explosive canister and choke section, or, at the option of the Testing Party, until the explosive canister and choke section are fixed in place with solidified stemming material, in which case, after a period of no more than 24 hours for placement of explosives, to observe the explosive canister, the choke section, and the completion of stemming around each explosive canister and choke section; and to observe the stemming of each hydrodynamic measurement zone of the emplacement hole, the stemming of any access or bypass drifts, the stemming of any voids in each hydrodynamic measurement zone connected to the emplacement hole; and to observe the entire stemming of each associated satellite hole;

(d) with respect to any explosion having a planned yield exceeding 50 kilotons and characteristics differing from those set forth in paragraph 2 or 3 of this Section with respect to a test of standard configuration:

(i) if an emplacement hole is vertical, prior to the lowering of an explosive canister into the emplacement hole, to confirm by direct measurement the external dimensions of each explosive canister; to inspect visually the external structure of each canister and each choke section; to confirm by direct measurement that each choke section conforms to any specifications provided by the Testing Party in accordance with paragraph 10(c)(iii) of Section XI of this Protocol; to observe continuously each explosive canister and each choke section from the time inspections and measurements, carried out in accordance with this subparagraph, begin; to observe the emplacement of each explosive canister into the emplacement hole and stemming of the emplacement hole from the time an entire explosive canister is last visible above the entrance of the emplacement hole until completion of stemming of each hydrodynamic measurement zone of the emplacement hole; to determine by direct measurement the depth of emplacement of the upper surface of each explosive canister; and to observe the entire stemming of each associated satellite hole;

(ii) if an emplacement hole is horizontal, following placement of all explosive canisters in the emplacement hole and prior to the beginning of stemming around the explosive canister, to confirm by direct measurement the external dimensions of each explosive canister; to inspect visually the entire external structure of each explosive canister; to confirm by direct measurement that each choke section conforms to any specifications provided by the Testing Party in accordance with paragraph 10(c)(iii) of Section XI of this Protocol; to observe continuously each explosive canister and each choke section from the time inspections and measurements, carried out in accordance with this subparagraph, begin, until the completion of stemming around each explosive canister and choke section, or, at the option of the Testing Party, until the explosive canister and choke section are fixed in place with solidified stemming material, in which case, after a period of no more than 24 hours for placement of explosives, to observe the explosive canister, the choke section, and the completion of stemming around each explosive canister and choke section; to observe the stemming of each hydrodynamic measurement zone of the emplacement hole, the stemming of any access or bypass drifts, the stemming of any voids in each hydrodynamic measurement zone connected to the emplacement hole, except those voids and any access or bypass drifts designated by the Testing Party to remain unstemmed in accordance with paragraph 10(c) of Section XI of this Protocol; and to observe the entire stemming of each associated satellite hole; and

(iii) if a test is conducted in a cavity, to measure the shape and volume of the cavity after excavation and once again immediately prior to placement of explosive canisters with explosives or placement of explosives into explosive canisters. After placement of explosive canisters with explosives or placement of explosives into explosive canisters, Designated Personnel shall have the right to observe explosive canisters and to observe the stemming of each hydrodynamic measurement zone of the emplacement hole and any access or bypass drifts, and of any voids connected to the emplacement hole, within each hydrodynamic measurement zone, except those voids and any access or bypass drifts designated by the Testing Party to remain unstemmed, in accordance with paragraph 10(c) of Section XI of this Protocol; and to observe the entire stemming of each associated satellite hole;

(e) with respect to a test of standard configuration, as well as with respect to any explosion having a planned yield of 50 kilotons or less:

(i) if an emplacement hole is vertical, to unobstructed visual observation of the entrance to the emplacement hole and associated satellite hole from completion of stemming of the satellite hole and of the hydrodynamic measurement zones of the emplacement hole until departure of all personnel from the test location prior to the test; and

(ii) if an emplacement hole is horizontal, to unobstructed visual observation of sensing elements and cables until completion of stemming of each associated satellite hole, and of cables specified in paragraph 3(b) of Section VIII of this Protocol until completion of their installation in protective cableways specified in paragraph 4(d) of this Section, as well as observation of the entrance to the emplacement hole from completion of stemming of each satellite hole and of the hydrodynamic measurement zones of the emplacement hole until departure of all personnel from the test location prior to the test;

(f) with respect to any explosion having a planned yield exceeding 50 kilotons and characteristics differing from those set forth in paragraph 2 or 3 of this Section with respect to a test of standard configuration:

(i) if an emplacement hole is vertical, to unobstructed visual observation of the entrance to the emplacement hole and each satellite hole from completion of stemming of all satellite holes and the hydrodynamic measurement zones of the emplacement hole until departure of all personnel from the test location prior to the test; and

(ii) if an emplacement hole is horizontal, to unobstructed visual observation of the sensing elements and cables and transducers until completion of stemming of all associated satellite holes, and of cables specified in paragraph 3(b) of Section VIII of this Protocol until completion of their installation in protective cableways specified in paragraph 6(c) of this Section of the Protocol, as well as the entrance to the emplacement hole from completion of stemming of all satellite holes and the hydrodynamic measurement zones of the emplacement hole until departure of all personnel from the test location prior to the test;

(g) to monitor electrically the integrity and performance of their equipment specified in paragraphs 3(a), 3(b), 3(c), 3(d), 3(e), 3(f), and

3(g) of Section VIII of this Protocol and to observe continuously the cables specified in paragraphs 3(f) and 3(g) of Section VIII of this Protocol and the cableways in which they are installed as specified in paragraphs 4(d) and 6(c) of this Section, from the time emplacement of sensing elements and cables and transducers begins until departure of all personnel from the test location. Following departure of personnel and until reentry of personnel to the test location following the test, Designated Personnel shall have the right to observe remotely, by means of closed-circuit television, the surface area containing their hydrodynamic yield measurement equipment;

(h) to monitor electrically the integrity and performance of their equipment specified in paragraphs 3(a), 3(b), 3(c), 3(d), 3(f), and 3(g) of Section VIII of this Protocol from the command and monitoring facility specified in paragraph 3(e) of Section VIII of this Protocol, from commencement of its use by Designated Personnel until completion of the activities specified in paragraphs 9(m) and 14(b) of this Section;

(i) to transmit from the command and monitoring facility to each hydrodynamic recording facility the commands required for operation of that hydrodynamic recording facility;

(j) to use channels provided by the Testing Party within its telemetry system for transmission of information specified in subparagraphs (h), (i), (k), and (l) of this paragraph, if such a system is used at the test site of the Testing Party, or to use for these purposes its own cables, specified in paragraph 3(g) of Section VIII of this Protocol;

(k) to carry out hydrodynamic yield measurements and to record the hydrodynamic data;

(l) to transmit the hydrodynamic yield measurement data from each hydrodynamic recording facility to the command and monitoring facility; and

(m) to reenter the area containing each hydrodynamic recording facility at the same time as personnel of the Testing Party, and to have access, in accordance with procedures agreed upon by the Parties and accompanied by personnel of the Testing Party, to each hydrodynamic recording facility, for the purposes of retrieving and verifying the authenticity of recorded data and assessing the performance of the equipment of the Verifying Party during data recording and transmission.

10. During the carrying out of hydrodynamic yield measurements:

(a) the Representative of the Testing Party shall notify, in writing, the Designated Personnel Team Leader at the test site of the beginning of the period of readiness and the planned time of the test, in accordance with paragraph 13 of Section IV of this Protocol;

(b) the Testing Party shall produce an event readiness signal in the interval from seven to 15 minutes prior to the planned time of the test, as specified by the Verifying Party, with an accuracy of plus or minus 100 milliseconds. The parameters for this signal, produced by the Testing Party, and procedures for its transmission and reception shall be agreed upon by the Parties;

(c) Designated Personnel shall have the right to generate, using the trigger conditioner devices approved by the Parties, a timing reference signal using an electromagnetic pulse from their sensing elements and cables. This timing reference signal shall be generated, transmitted, and used by Designated Personnel without intervention by personnel of the Testing Party. For each explosion in a test, the trigger conditioner shall receive signals from one or two hydrodynamic yield measurement cables;

(d) Designated Personnel, under observation of personnel of the Testing Party, shall have the right to install the trigger conditioner devices. From the time of installation of these devices until the time of the test:

(i) Designated Personnel shall have the right to test and monitor the operation of the devices;

(ii) personnel of the Testing Party shall have the right to monitor the operation of the devices and to monitor and record the timing reference signal; and

(iii) neither Designated Personnel nor personnel of the Testing Party shall have

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physical access to the devices, except under observation of personnel of the other Party;

(e) the Testing Party shall provide, at the request of the Verifying Party, an electrical pulse corresponding to the nuclear explosion zero-time, with an accuracy of plus or minus one microsecond, for each explosion. The parameters for this signal and procedures for its transmission and reception shall be agreed upon by the Parties;

(f) the Testing Party shall have exclusive control over the generation of signals specified in subparagraphs (b) and (e) of this paragraph;

(g) Designated Personnel, under observation of personnel of the Testing Party, shall install in each cable from each satellite hole to a hydrodynamic recording facility an anti-intrusiveness device for interrupting the transmission, from the sensing elements and cables and transducers to the hydrodynamic recording facility of the Verifying Party, of any signal unrelated to hydrodynamic yield measurements. These devices shall be provided by the Testing Party from among those approved by both Parties and shall not interfere with the ability of Designated Personnel to record data required for hydrodynamic yield measurements of each explosion in a test. From the time of installation of these devices until the final dry run, personnel of each Party shall have the right to test and monitor the operation of the devices and to have physical access to them only under observation of personnel of the other Party. Sole control over the triggering of these devices shall be transferred to the Testing Party at the time of departure of all personnel from the test location prior to the test;

(h) each hydrodynamic recording facility shall have an independent grounding loop with an impedance no greater than 10 ohms;

(i) the shields of all cables associated with sensing elements and cables and transducers of the Verifying Party shall be grounded:

(i) at the input to each hydrodynamic recording facility of the Verifying Party;

(ii) at the output of each anti-intrusiveness device;

(iii) at the input of each trigger conditioner device; and

(iv) in those cables associated with sensing elements and cables in which no trigger conditioner device is installed, at the input of the anti-intrusiveness device;

(j) grounding of each hydrodynamic recording facility, as well as grounding of cables associated with the sensing elements and cables and transducers of the Verifying Party, shall be carried out by Designated Personnel under observation of personnel of the Testing Party. The grounding system of each hydrodynamic recording facility, as well as of cables associated with the sensing elements and cables and transducers shall be under the joint control of the Parties;

(k) Designated Personnel shall have the right to install, under observation of personnel of the Testing Party, an isolation transformer at the input of each anti-intrusiveness device or trigger conditioner device. From the time of installation of these devices until the time of the test, neither Designated Personnel nor personnel of the Testing Party shall have physical access to these devices, except under observation of personnel of the other Party;

(l) the Testing Party shall have the right to install, at a distance of no less than 50 meters from each hydrodynamic recording facility, a facility containing instrumentation for monitoring and recording the timing reference signal, for controlling and monitoring the operation of the anti-intrusiveness devices, and for the transmission of control and trigger signals. Signals between the instrumentation facility of the Testing Party and each hydrodynamic recording facility shall be transmitted over fiber optic cables. The Testing Party shall provide for the installation, in each hydrodynamic recording facility, of terminal devices for converting optical signals into electrical signals produced in accordance with subparagraphs (b) and (e) of this paragraph, and for monitoring the interval of interruption and for monitoring the power supply of the anti-intrusiveness device, in accordance with subparagraph (g) of this paragraph. The Verifying Party shall provide for the installation in the facility of the Testing Party of a terminal device for converting an optical signal into an electrical time referencing signal provided in accordance with subparagraph (d)(ii) of this paragraph. These provided devices shall be installed under observation of personnel of both Parties and sealed by the Party providing the device. The instrumentation facilities specified in this subparagraph shall be under the exclusive control of the Testing Party; and

(m) upon arrival at the test site, Designated Personnel shall provide the Testing Party with a copy of the block diagram of the equipment configuration for hydrodynamic yield measurements for the test together with notification of any changes from the block diagram approved during the familiarization process provided in paragraph 6(d)(i) of Section VIII of this Protocol. No less than two days prior to the final dry run, Designated Personnel shall notify the Testing Party, in writing, of any additional changes in this block diagram. In the event of any changes in the block diagram, the Testing Party shall have the right, within one day following such notification, to disapprove any changes it finds inconsistent with its non-intrusiveness, containment, safety, or security requirements. Such disapproval shall be provided, in writing, to the Designated Personnel Team Leader, stating the specific reasons for disapproval. Any changes not disapproved shall be deemed accepted. If a change is disapproved, Designated Personnel shall configure the equipment in accordance with the block diagram previously approved in accordance with paragraph 6(d)(i) of Section VIII of this Protocol, unless the Testing Party otherwise agrees.

11. Personnel of the Testing Party shall have the right to observe use of equipment by Designated Personnel at the test site, with access to each hydrodynamic recording facility and the command and monitoring facility of the Verifying Party subject to the following:

(a) at any time prior to the test that Designated Personnel are not present in these facilities, these facilities shall be sealed by the seals of both Parties. Seals shall be removed only under observation of personnel of both Parties;

(b) prior to the test, except for periods specified in subparagraphs (c) and (d) of this paragraph, personnel of the Testing Party may enter

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these facilities only with the agreement of the Designated Personnel Team Leader and when accompanied by the Team Leader or his designated representative;

(c) for the period of two hours prior to the final dry run, and for the period of two hours prior to the time fixed for withdrawal of all personnel to the area designated for occupation during the test, personnel of the Testing Party, not to exceed two, shall have the right to join Designated Personnel in each hydrodynamic recording facility, to observe final preparations of the equipment and to confirm the agreed configuration of that equipment. All personnel shall leave the facility together; and

(d) for a period beginning two hours prior to a test and ending upon completion of the activities specified in paragraphs 9(m) and 14(b) of this Section, personnel of the Testing Party, not to exceed two, shall have the right to join Designated Personnel in the command and monitoring facility to observe final command and monitoring of the recording equipment and acquisition and duplication of data, and to receive a copy of these data.

12. Designated Personnel shall have the right to obtain photographs taken by personnel of the Testing Party using photographic cameras of the Testing Party or, at the option of the Testing Party, photographic cameras provided by the Verifying Party. These photographs shall be taken under the following conditions:

(a) the Testing Party shall identify those of its personnel who will take photographs;

(b) photographs shall be taken at the request and under observation of Designated Personnel. If requested by Designated Personnel, such photographs shall show the size of an object by placing a measuring scale, provided by Designated Personnel, alongside that object during the photographing;

(c) Designated Personnel shall determine whether photographs conform to those requested, and, if not, repeat photographs shall be taken; and

(d) before completion of any photographed operation related to emplacement, and prior to the time at which an object that is being photographed becomes permanently hidden from view, Designated Personnel shall determine whether requested photographs are adequate. If they are not adequate, before the operation shall proceed additional photographs shall be taken until the Designated Personnel determine that the photographs of that operation are adequate. This photographic process shall be undertaken as expeditiously as possible, and in no case shall the cumulative delay resulting from this process exceed two hours for each of the operations specified in paragraphs 13(a), 13(b), 13(d), 13(e), and 13(f) of this Section, unless the Parties otherwise agree, except that stemming shall not be interrupted as a result of the photographic process.

13. Designated Personnel shall have the right to obtain photographs, taken in accordance with paragraph 12 of this Section, of the following:

(a) the emplacement and installation of equipment associated with the hydrodynamic yield measurement method, including all sensing elements and cables and transducers and their connections, each hydrodynamic recording facility, the command and monitoring facility, anti-intrusiveness devices, and trigger conditioner devices;

(b) the stemming of all satellite holes;

(c) all choke sections and the exterior of each explosive canister;

(d) if an emplacement hole is vertical, the emplacement of each explosive canister and the stemming of the hydrodynamic measurement zones of the emplacement hole;

(e) if an emplacement hole is horizontal, the interior of the emplacement hole within 20 meters of the emplacement point of each installed explosive canister and the stemming of hydrodynamic measurement zones of the emplacement hole;

(f) core samples and rock fragments obtained in accordance with paragraphs 5(e), 5(f), 5(g), 5(h), 7(e), 7(f), 7(g), and 7(h) of this Section, the equipment and activities associated with extracting such samples, as well as the interior of the emplacement hole, if an emplacement hole is horizontal, at the stations where core samples or rock fragments were extracted; and

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(g) with the agreement of the Testing Party, other activities of Designated Personnel directly related to the use of the hydrodynamic yield measurement method.

14. The following procedures shall apply to the recovery and transfer of data:

(a) no later than the final dry run, Designated Personnel shall inform personnel of the Testing Party of the procedures for recovering and verifying the authenticity of data and shall advise personnel of the Testing Party, at the time of data recovery, of any changes Designated Personnel make in those procedures and the reasons for such changes;

(b) following the test, Designated Personnel, in the presence of personnel of the Testing Party, shall enter the hydrodynamic recording facility and recover all recordings of data taken at the time of the test. Designated Personnel shall prepare two identical copies of such data. Personnel of the Testing Party shall select one of the two identical copies. Designated Personnel shall retain the other copy, but no other such data; and

(c) following the completion of the activities specified in paragraph 9(m) of this Section and subparagraph (b) of this paragraph, Designated Personnel shall leave the hydrodynamic recording facility and the command and monitoring facility at the same time as personnel of the Testing Party. Designated Personnel shall have no further access to their hydrodynamic recording facility, command and monitoring facility, or equipment until these are returned to the Verifying Party in accordance with paragraph 7(i)(ii) of Section VIII of this Protocol, unless the Parties otherwise agree, in which case access by Designated Personnel to their facilities and equipment shall be under observation of personnel of the Testing Party.

15. Designated Personnel shall not be present in areas from which all personnel of the Testing Party have been withdrawn in connection with the test, but shall have the right to reenter those areas, as provided in this Protocol, at the same time as personnel of the Testing Party.

16. All hydrodynamic yield measurement activities shall be carried out in accordance with the coordinated schedule. Designated Personnel who will carry out the

activities specified in this Section and in paragraph 7(e) of Section VIII of this Protocol shall arrive at the test site in accordance with the coordinated schedule, but no less than three days prior to the date specified by the Testing Party for the beginning of these activities.

17. The number of Designated Personnel carrying out hydrodynamic yield measurements with respect to a test of standard configuration conducted in a single emplacement hole, without regard to the number of ends of that emplacement hole, as these are specified in paragraph 3(b) of this Section, shall not exceed, at any time, 35 individuals, and the number of Designated Personnel, at any time, carrying out hydrodynamic yield measurements with respect to a test of non-standard configuration or a test conducted in more than one emplacement hole shall not exceed, at any time, 45 individuals, unless the Parties otherwise agree. Within these totals, the coordinated schedule shall be developed so as to ensure that the number of Designated Personnel for carrying out hydrodynamic yield measurements with respect to a specific test shall not exceed:

(a) if a test is of standard configuration, for carrying out activities related to hydrodynamic yield measurements, other than activities specified in paragraph 5(j) of this Section, 26 individuals and, for carrying out activities specified in paragraph 5(j) of this Section:

(i) if an emplacement hole is vertical, 18 individuals; or

(ii) if an emplacement hole is horizontal, 22 individuals; or

(b) if a test is of non-standard configuration or is conducted in more than one emplacement hole, for carrying out activities related to hydrodynamic yield measurements other than activities specified in paragraph 5(j) or 7(j) of this Section, 35 individuals and, for carrying out activities specified in paragraph 5(j) or 7(j) of this Section, 26 individuals; and

(c) Designated Personnel shall include at least two individuals fluent in the language of the Testing Party.

SECTION VI. SEISMIC YIELD MEASUREMENT METHOD

1. For the purposes of the use of the seismic yield measurement method, the Verifying Party shall have the right to carry out independent seismic measurements at three Designated Seismic Stations in the territory of the Testing Party, in accordance with this Section. Designated Seismic Stations of each Party shall meet the following criteria:

(a) be located within its continental territory;

(b) each shall have an Lg-wave signal-to-noise ratio not less than nine for any test in its territory having a yield of 150 kilotons. The signal-to-noise ratio shall be defined as one-half of the maximum peak amplitude of the Lg-wave signal divided by the root-mean-square value of the seismic noise in the recording segment immediately preceding the arrival of the P-wave signal and having a duration of no less than one minute. The signals and the noise shall be measured on a vertical component of the recording in the frequency range typical of Lg-waves recorded at the Designated Seismic Station;

(c) ensure wide azimuthal coverage of each of its test sites, insofar as permitted by their geographic location; and

(d) be chosen from those existing seismic stations that provide earthquake and other seismic event data, including tests, to archives in the territory of the Testing Party, accessible to the Verifying Party.

2. The United States of America designates the following three seismic stations as meeting the criteria specified in paragraph 1 of this Section: Tulsa, Oklahoma (TUL) (35°55'N; 095°48'W); Black Hills, South Dakota (RSSD)(44°07'N; 104°02'W); and Newport, Washington (NEW) 48°16'N; 117°07'W).

3. The Union of Soviet Socialist Republics designates the following three seismic stations as meeting the criteria specified in paragraph 1 of this Section: Arti (ARU)(56°26'N; 058°34'E); Novosibirsk (NVS)(54°51'N; 083°16'E); and Obninsk (OBN)(55°07'N; 036°34'E).

4. Upon entry into force of the Treaty each Party shall provide the other Party with the following information on each of its Designated Seismic Stations:

(a) a site diagram of the station showing the areas assigned for use by Designated Personnel;

(b) elevation above mean sea level to the nearest 10 meters; and

(c) types of rock on which it is located.

5. The Testing Party shall have the right to replace one or more of its Designated Seismic Stations, provided:

(a) the new Designated Seismic Station meets all the criteria specified in paragraph 1 of this Section;

(b) notification of the decision of the Testing Party to select a new Designated Seismic Station, together with the station name and its reference code, the station coordinates to the nearest one minute of geographic latitude and longitude, and the information and site diagram for the new station specified in paragraph 4 of this Section, is provided to the Verifying Party no less than 90 days prior to the planned date of any test with respect to which the Verifying Party has notified the Testing Party that it intends to use the seismic yield measurement method and for which this Designated Seismic Station would be used; and

(c) seismic data, for the period from entry into force of the Treaty until the new Designated Seismic Station begins use as a Designated Seismic Station, are placed in archives in the territory of the Testing Party, accessible to the Verifying Party. If a Designated Seismic Station is replaced within the first four years following entry into force of the Treaty, seismic data for at least four years of operation of the new Designated Seismic Station shall be placed in archives in the territory of the Testing Party, accessible to the Verifying Party.

6. If any Designated Seismic Station does not meet the criteria specified in paragraph 1 of this Section, the Verifying Party shall have the right to request its replacement with another Designated Seismic Station that meets such criteria. Any request by the Verifying Party for replacement shall state the reasons this Designated Seismic Station does not meet the criteria specified in paragraph 1 of this Section, and shall be transmitted to the Testing Party through the Nuclear Risk Reduction Centers. If the Parties are unable to resolve the issue of replacement of a Designated Seismic Station, it shall immediately be referred

to the Bilateral Consultative Commission in accordance with paragraph 1( ) of Section XI of this Protocol for resolution.

7. The Testing Party shall bear the costs of replacing any Designated Seismic Station in its territory, including any costs of eliminating the previous Designated Seismic Station and the costs of preparing a new Designated Seismic Station in accordance with paragraph 6 of this Section.

8. If requested by the Verifying Party, the Testing Party shall provide, according to agreed technical specifications, at each Designated Seismic Station, for the exclusive use of Designated Personnel:

(a) a surface vault and pier for the installation of seismic sensors, to be located not less than 100 meters and not more than 200 meters from the seismometers of the Testing Party, unless the Parties otherwise agree;

(b) a borehole for installation of seismic sensors, to be located not less than 100 meters and not more than 200 meters from the seismometers of the Testing Party, unless the Parties otherwise agree;

(c) a working facility with an area not less than 20 square meters, for the installation and operation of equipment by Designated Personnel and situated not less than 75 meters and not more than 125 meters from the seismometers of the Verifying Party, unless the Parties otherwise agree;

(d) a covered cableway that will allow Designated Personnel to connect devices in the facilities specified in subparagraphs (a), (b), and (c) of this paragraph;

(e) a facility for the storage of shipping containers and spare parts for the use of Designated Personnel while carrying out their activities at the Designated Seismic Stations; and

(f) electrical power from its standard electrical network through converters provided by the Verifying Party or, by agreement of the Parties, by the Testing Party.

9. At each Designated Seismic Station, personnel of the Testing Party shall:

(a) have the right to observe the installation and calibration of equipment by Designated Personnel, but at all other times they may be present only at the invitation of the Designated Personnel Team Leader and when accompanied by the Designated Personnel Team Leader or his designated representative;

(b) not interfere with the activities of Designated Personnel with regard to the installation, calibration, adjustment, and operation of equipment; and

(c) provide assistance and logistical support to Designated Personnel in accordance with paragraph 13 of Section XI of this Protocol, and, by agreement of the Parties, other assistance and logistical support requested by Designated Personnel.

10. In carrying out seismic measurements at the Designated Seismic Stations, Designated Personnel shall have the right to:

(a) confirm that the agreed technical specifications for the installation and operation of the equipment have been met during the time periods specified in the coordinated schedule;

(b) have access to their equipment from the time of the arrival of Designated Personnel at, and until their departure from, each Designated Seismic Station, unless otherwise provided in this Protocol;

(c) install, calibrate, adjust, and continuously operate their equipment;

(d) record seismic signals and universal time signals continuously from the time their equipment is installed until two hours after the test, as well as process data to monitor the quality of recorded data and retrieve and copy all recorded data;

(e) use their own electrical sources to supply electrical power to their equipment specified in paragraph 4 of Section VIII of this Protocol;

(f) install and operate tamper-detection equipment and observe the cableway and the exterior of the facility in which the seismic sensors are installed;

(g) assess the integrity and performance of their equipment and confirm that there has been no interference with seismic measurements and the recording of such measurements; and

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(h) lock and seal the facilities specified in paragraphs 8(a), 8(b), 8(c), and 8(e) of this Section with their own seals.

11. The Representative of the Testing Party shall notify, in writing and referenced to Universal Time Coordinated, the Designated Personnel Team Leader at each Designated Seismic Station of the beginning of the period of event readiness and the planned time of the test, to the nearest one second, in accordance with paragraph 13 of Section IV of this Protocol.

12. At each Designated Seismic Station, Designated Personnel shall:

(a) upon arrival, provide the Representative of the Testing Party with a description of the recording format and the computer program to enable the Testing Party to read digital data, if digital recordings of data are made;

(b) prior to departure, provide the Representative of the Testing Party with the following:

(i) a copy of all data recorded by all equipment used by Designated Personnel, on the same medium as that on which these data were recorded;

(ii) a graphic representation on a paper medium of the seismic data of the test for a period of time beginning one minute prior to the test and ending 30 minutes following the test; and

(iii) the results of the calibration of all seismic equipment, including the amplitude-frequency characteristics of the equipment used to measure and record the seismic data; and

(c) prior to their departure, prepare for inspection, storage in accordance with the conditions chosen by the Testing Party, or shipment of their equipment.

13. Designated Personnel shall have the right to acquire photographs of operations and activities related to seismic yield measurement at the Designated Seismic Stations. Photographs shall be taken by personnel of the Testing Party, using their own photographic cameras, or, at the option of the Testing Party, by Designated Personnel using their own photographic cameras.

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(a) If the Testing Party takes photographs, the following conditions shall be met:

(i) the Testing Party shall identify those of its personnel who will take photographs;

(ii) photographs shall be taken at the request and under observation of Designated Personnel. If requested by Designated Personnel, such photographs shall show the size of an object being photographed by placing a measuring scale, provided by Designated Personnel, alongside that object during the photographing; and

(iii) Designated Personnel shall determine whether photographs that were taken conform to those requested, and, if not, repeat photographs shall be taken.

(b) If Designated Personnel take photographs, the following conditions shall be met:

(i) the Verifying Party shall identify those of its Designated Personnel who will take photographs; and

(ii) photographs shall be taken under observation of personnel of the Testing Party, unless otherwise agreed by the Parties.

14. All activities of Designated Personnel at the Designated Seismic Stations shall be carried out in accordance with the coordinated schedule. Designated Personnel shall arrive at the Designated Seismic Stations in accordance with this schedule, but no less than 10 days prior to the planned date of the test. Designated Personnel shall depart the Designated Seismic Station within two days following the test.

15. If the planned date of a test is postponed by more than 10 days following receipt of the most recent notification, Designated Personnel shall have the right to leave the Designated Seismic Stations or, if requested by the Representative of the Testing Party, shall depart the Designated Seismic Stations for a mutually agreed location within the territory of the Testing Party or depart the territory of the Testing Party through the point of entry. If Designated Personnel leave the Designated Seismic Stations, they shall have the right to seal their equipment located at the stations. The seals shall not be broken except by Designated Personnel under observation of personnel of the Testing Party. Designated Personnel shall

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have the right to reoccupy the Designated Seismic Stations no less than 72 hours prior to the next planned time of the test.

16. The number of Designated Personnel carrying out seismic measurements at each Designated Seismic Station shall not exceed five. At least one individual fluent in the language of the Testing Party shall be among Designated Personnel at each Designated Seismic Station.

SECTION VII. ON-SITE INSPECTION

1. In carrying out on-site inspection, the Verifying Party shall have the right to confirm the validity of the geological, geophysical, and geometrical information provided in accordance with paragraphs 4 and 9 of Section IV of this Protocol, in accordance with the following procedures:

(a) the Testing Party shall provide Designated Personnel, upon their arrival at the test site, with the results of any studies of core samples and rock fragments extracted from each emplacement hole and any exploratory holes and tunnels, and the results of logging and geodetic measurements carried out in each emplacement hole and any exploratory holes and tunnels, relevant to the geology and geophysics of the emplacement medium, if the Testing Party carried out such studies and measurements;

(b) using their own equipment and under observation of personnel of the Testing Party, Designated Personnel shall have the right to carry out:

(i) if an emplacement hole is vertical, in the emplacement hole, from the end of the hole to the entrance to the hole, gamma-gamma, gamma, neutron, electrical resistivity, magnetic susceptibility, gravity, acoustic, television, and caliper logging, and measurements of the depth and cross section of the emplacement hole, as well as measurements to determine the location and volume of voids, using, in a non-destructive way, such methods as electromagnetic measurements, radar, and acoustic sounding; and

(ii) if an emplacement hole is horizontal, in the holes specified in subparagraph (d)(ii) of this paragraph, and in the emplacement hole in the regions extending from each end of the emplacement hole to a point located 300 meters from the corresponding emplacement point in the direction of the entrance to the emplacement hole, gamma-gamma, gamma, neutron, electrical resistivity, magnetic susceptibility, gravity, acoustic, and caliper logging, and measurements of the length and cross section of the emplacement hole, as well as measurements to determine the location and volume of voids, using, in a non-destructive way, such methods as electromagnetic measurements, radar, and acoustic sounding;

(c) all logging and geometrical measurement data obtained by Designated Personnel in accordance with subparagraph (b) of this paragraph, including calibration data, shall be duplicated, and a copy of these data shall be provided to personnel of the Testing Party prior to the departure from the test site of Designated Personnel who have carried out those measurements. Calibration data shall include information needed to confirm the sensitivity of logging equipment under the conditions in which it is used;

(d) Designated Personnel shall have the right to receive:

(i) if an emplacement hole is vertical, core samples or rock fragments, at the option of Designated Personnel, extracted from the emplacement hole at 10 depths specified by Designated Personnel, plus one additional depth for every complete 50-meter distance between the uppermost and lowest emplacement points. The total volume of core samples or rock fragments extracted at each of the specified depths shall be no less than 400 cubic centimeters and no more than 3000 cubic centimeters, unless the Parties otherwise agree; and

(ii) if an emplacement hole is horizontal, core samples or rock fragments, at the option of Designated Personnel, from the emplacement hole in the regions extending from each end of the emplacement hole to a point located 300 meters from the corresponding emplacement point in the direction of the entrance to the emplacement hole. Core samples shall be extracted during drilling from each of five holes drilled at stations in the emplacement hole, specified by

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Designated Personnel. These five stations shall be separated from each other by no less than 15 meters. At each station the hole shall be drilled in a direction specified by Designated Personnel, except that at each station within 65 meters of each emplacement point the Testing Party shall have the right to exclude two 90-degree sectors separated by a sector of 90 degrees. The diameter of each drilled hole shall be no less than 0.09 meters and no more than 0.15 meters, and the depth of each hole shall be no more than the diameter of the emplacement hole at that station. Core samples shall be extracted at locations specified by Designated Personnel along the drilled hole. Rock fragments shall be extracted from the walls of the emplacement hole at five stations specified by Designated Personnel. The total volume of core samples or rock fragments extracted at each station shall be no less than 400 cubic centimeters and no more than 3000 cubic centimeters, unless the Parties otherwise agree.

(e) core samples or rock fragments, at the option of Designated Personnel, shall be extracted, in accordance with subparagraph (d) of this paragraph, by personnel of the Testing Party, under observation of Designated Personnel, or by Designated Personnel, at the option of the Testing Party;

(f) if the Testing Party does not extract core samples or rock fragments in accordance with subparagraph (d) of this paragraph, Designated Personnel shall have the right to do so, using their own equipment and under observation of personnel of the Testing Party;

(g) if, prior to arrival of Designated Personnel at the test site, the Testing Party has cased more than a total of 20 meters within any 100-meter segment of a vertical emplacement hole in the region extending from the end of the emplacement hole to a point 300 meters from the planned emplacement point in the direction of the entrance to the emplacement hole, the Testing Party shall provide an uncased hole with respect to which the Verifying Party shall have the same rights as those specified for an emplacement hole in subparagraphs (b), (d), (e), and (f) of this paragraph. This uncased hole shall be located no more than 50 meters from the emplacement hole and shall have a depth no less than that of the emplacement hole. If personnel of the Testing Party, under observation of Designated Personnel, extract core samples through coring during

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the drilling of this uncased hole, the diameter of this hole shall be no less than 0.09 meters. If Designated Personnel, under observation of personnel of the Testing Party, extract core samples from this uncased hole following drilling, the diameter of this uncased hole shall be no less than 0.3 meters; and

(h) Designated Personnel shall have the right to retain core samples and rock fragments specified in subparagraphs (d), (e), (f), and (g) of this paragraph. Any such core samples or rock fragments shall be prepared in accordance with the procedures agreed upon by the Parties for shipment to the territory of the Verifying Party.

2. Designated Personnel shall have the right:

(a) if an emplacement hole is vertical, to observe the emplacement of each explosive canister into the emplacement hole from the time the bottom of the canister is last visible above the entrance of the emplacement hole, and to determine by direct measurement the depth of emplacement of the bottom of the canister;

(b) if an emplacement hole is horizontal, to determine by direct measurement the location of each explosive canister in the emplacement hole, and to confirm the presence of at least 10 meters of stemming, as specified in subparagraph (c)(ii) of this paragraph, in any previously stemmed tunnel that had provided access to an explosive canister, using, in a non-destructive way, such methods as electromagnetic measurements, radar, and acoustic sounding;

(c) to observe stemming of each emplacement hole:

(i) if an emplacement hole is vertical, until a solid concrete plug no less than three meters thick is installed above the explosive canister closest to the entrance to the emplacement hole; and

(ii) if an emplacement hole is horizontal, until access to any explosive canister has been prevented by installation of stemming material for a distance no less than 10 meters, including the installation of a solid concrete plug no less than three meters thick;

(d) to have access along agreed routes to the location of the test to carry out activities related to on-site inspection;

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(e) to have access to their equipment associated with the carrying out of on-site inspection from the time of its transfer to Designated Personnel at the test site, until it is transferred to personnel of the Testing Party in accordance with paragraph 9(g) of Section VIII of this Protocol, unless otherwise provided in this Protocol;

(f) if an emplacement hole is vertical, to have access, for the purpose of visual inspection of the ground surface, to the area delineated by a circle having a radius of 300 meters, centered on the entrance to the emplacement hole; and

(g) if an emplacement hole is horizontal, to have access, for the purpose of visual inspection of the ground surface, to the area delineated by a circle having a radius of 300 meters, centered directly above the emplacement point of each explosive canister.

3. Designated Personnel shall have the right to obtain photographs associated with on-site inspection, which shall be taken in accordance with paragraph 12 of Section V of this Protocol, of the following:

(a) if an emplacement hole is vertical, the emplacement of each explosive canister and the stemming of the emplacement hole specified in paragraph 2(c)(i) of this Section;

(b) if an emplacement hole is horizontal, the interior of the emplacement hole within 20 meters of the emplacement point of each explosive canister, and the stemming of the emplacement hole specified in paragraph 2(c)(ii) of this Section;

(c) core samples and rock fragments, extracted in accordance with paragraphs 1(d), 1(e), 1(f), and 1(g) of this Section, the equipment and activities associated with extracting such samples, as well as the interior of the emplacement hole, if the emplacement hole is horizontal, at the stations where core samples and rock fragments were extracted; and

(d) with the agreement of the Testing Party, other activities of Designated Personnel directly related to on-site inspection.

4. In no case shall the cumulative delay resulting from the photographic process specified in paragraph 3 of this Section exceed two hours for each of the operations specified in paragraph 3 of this Section, unless the Parties

otherwise agree, except that stemming shall not be interrupted as a result of the photographic process.

5. All on-site inspection activities shall be carried out in accordance with the coordinated schedule. Designated Personnel shall have the right, within a period not to exceed 15 days, to carry out logging and coring activities specified in paragraph 1 of this Section, unless the Parties otherwise agree and so specify in the coordinated schedule. These activities shall be completed no less than one day prior to the beginning of emplacement of explosives. Upon completion of the activities specified in paragraph 1 of this Section, Designated Personnel shall depart the territory of the Testing Party, except that Designated Personnel who will also participate in the activities specified in paragraph 2 of this Section shall remain at the test site, if the Parties decide that this is required by the coordinated schedule. Otherwise, Designated Personnel shall depart the territory of the Testing Party or, if agreed by the Parties, they may depart to another point within the territory of the Testing Party. All Designated Personnel who will carry out the activities specified in paragraph 2 of this Section shall arrive at the test site in accordance with the coordinated schedule, but no less than three days prior to the date specified by the Testing Party for the beginning of these activities.

6. The number of Designated Personnel carrying out the activities specified in paragraph 1 of this Section shall not exceed 23 at any time. The number of Designated Personnel carrying out activities specified in paragraphs 2(a), 2(b), and 2(c) of this Section shall not exceed five at any time. At least one individual fluent in the language of the Testing Party shall be among Designated Personnel.

SECTION VIII. EQUIPMENT

1. Designated Personnel, in carrying out activities related to verification in accordance with this Protocol, shall have the right to bring into the territory of the Testing Party, install, and use:

(a) if the Verifying Party has provided notification of its intent to use the hydrodynamic yield measurement method, part or all of the equipment specified in paragraph 3 of this Section;

(b) if the Verifying Party has provided notification of its intent to use the seismic yield

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measurement method, part or all of the equipment specified in paragraph 4 of this Section;

(c) if the Verifying Party has provided notification of its intent to carry out on-site inspection, part or all of the equipment specified in paragraph 5 of this Section;

(d) maintenance and support equipment and spare parts necessary for the installation and functioning of equipment of the Verifying Party;

(e) electrical power supplies, converters, and associated cables;

(f) photographic equipment, if the Testing Party does not provide such equipment;

(g) locks, seals, and equipment necessary for installing seals of the Verifying Party and checking their integrity;

(h) medical and health physics equipment and supplies, personal protective gear, recreational items, and such other items as may be agreed upon by the Parties;

(i) office equipment and supplies, including, but not limited to, copying and facsimile machines, and personal computers;

(j) closed-circuit television equipment for the purpose of carrying out remote observation by Designated Personnel, in accordance with paragraph 9(g) of Section V of this Protocol, if the Testing Party does not provide such equipment; and

(k) satellite communications equipment, if the Testing Party does not provide satellite communications for Designated Personnel.

2. During the first meeting of the Coordinating Group for a specific test, the Parties shall agree, within 15 days, upon such additional materials, temporary structures, and equipment as may be requested in writing by the Verifying Party and which shall be supplied by the Testing Party for use by Designated Personnel. Such additional materials, temporary structures, and equipment, with their descriptions and operating instructions, shall be provided to Designated Personnel in accordance with the coordinated schedule.

3. The list of equipment for the purposes of the use of the hydrodynamic yield measurement method in accordance with Section V of this Protocol shall include:

(a) sensing elements and cables and transducers;

(b) electrical cables for transmission of hydrodynamic data from the entrance of each horizontal satellite hole to the entrance of the horizontal emplacement hole with which it is associated;

(c) the hydrodynamic recording facilities, with equipment, including computers, for acquiring, recording, and processing data and timing signals, as well as for transmitting and receiving hydrodynamic data and command and monitoring signals between each hydrodynamic recording facility and the command and monitoring facility, and the shock mitigation platforms for installing each hydrodynamic recording facility, and with equipment for distributing electrical analogs of the signals arriving from the instrumentation facility of the Testing Party;

(d) trigger conditioner devices for generating a timing reference signal from the electrical cables of the Verifying Party, and terminal devices for converting an optical signal into an electrical signal;

(e) the command and monitoring facility, with equipment, including computers, for generating and recording command and monitoring signals, for transmitting and receiving command and monitoring signals between each hydrodynamic recording facility and the command and monitoring facility, as well as for retrieving, storing, and processing hydrodynamic data;

(f) electrical cables for transmission of hydrodynamic data from the entrance of each vertical satellite hole or from the entrance of each horizontal emplacement hole to the hydrodynamic recording facility of the Verifying Party;

(g) electrical cables for the grounding of equipment and for above-ground transmission of electrical power, and electrical and fiber optic cables for above-ground transmission of command and monitoring signals and hydrodynamic data;

(h) measuring and calibration instrumentation, support equipment, and equipment for installing and positioning sensing elements and cables and transducers;

(i) equipment specified in paragraph 5 of this Section for confirming the characteristics of emplacement holes and satellite holes; and

(j) directional survey and magnetic survey equipment and equipment for determining the distance between emplacement holes and satellite holes, and equipment for detecting voids and determining their relative locations and volumes.

4. The list of equipment for the purposes of the use of the seismic yield measurement method at each Designated Seismic Station in accordance with Section VI of this Protocol shall include:

(a) seismic sensors capable of recording ground movements in three orthogonal directions within the frequency range from 0.1 to 10 hertz;

(b) equipment for amplifying, filtering, and digitizing the output signals of the seismic sensors;

(c) equipment for recording seismic data, and cables for interconnecting the equipment described in this paragraph;

(d) equipment for controlling sensors and recorders and for calibrating equipment;

(e) means of recording Universal Time Coordinated and referencing the recorded seismic data to it;

(f) equipment, including computers, to process data, to monitor the quality of the recorded data, as well as to display, store, and copy data; and

(g) equipment, including that using digital algorithms, for assessing the validity of recorded seismic data.

5. The list of equipment for the purposes of carrying out on-site inspection in accordance with Section VII of this Protocol shall include:

(a) equipment for obtaining the following logging data: gamma-gamma, gamma, neutron, electrical resistivity, magnetic susceptibility, gravity, television, acoustic, and caliper, as well as equipment for measuring the depth and cross section of emplacement holes and for measuring the volume of voids;

(b) equipment, including computers, for calibrating logging equipment, for monitoring the quality of the recorded data, as well as for recording, displaying, and copying data from logging equipment;

(c) equipment for extracting core samples and rock fragments; and

(d) geologist's field tools and kits, and equipment for the recording of field data.

6. The Testing Party shall have the right, for the purposes of an initial familiarization, to inspect the equipment and every component thereof that the Verifying Party intends to use in carrying out activities related to verification, and thereafter shall have the right to familiarize itself with the equipment and every component thereof that had not previously been provided for this purpose in accordance with this paragraph. For these purposes:

(a) the equipment subject to familiarization by the Testing Party shall include:

(i) a set of equipment for hydrodynamic yield measurements, specified in paragraph 3 of this Section;

(ii) a set of equipment for seismic yield measurements, specified in paragraph 4 of this Section;

(iii) a set of equipment for on-site inspection, specified in paragraph 5 of this Section; and

(iv) the equipment specified in paragraphs 1(d), 1(e), 1(f), 1(g), 1(h), 1(i), 1(j), and 1(k) of this Section;

(b) the Verifying Party shall initiate the familiarization process by notifying the Testing Party no less than 30 days prior to the date on which it intends to deliver equipment to the point of entry. This notification shall include a preliminary inventory of the equipment and the planned date of its delivery;

(c) no less than seven days prior to the date of delivery of equipment, the Verifying Party shall provide a complete inventory of such equipment, which shall also specify which equipment, in accordance with paragraph 7(h) of this Section, will be removed from the facilities of the Verifying Party immediately prior to the beginning of the final dry run and immediately prior to the test. At the same time the Verifying Party shall provide instructions on the installation and operation of equipment with functional and technical descriptions and specifications, including electrical diagrams, as well as block diagrams of the system and its components;

(d) no more than 45 days following receipt of the equipment, the Testing Party, taking into account the equipment specified for removal in subparagraph (c) of this paragraph, shall specify, in writing, to the Verifying Party:

(i) the equipment approved by it for use by Designated Personnel in accordance with the information provided in accordance with subparagraph (c) of this paragraph; and

(ii) the characteristics of any equipment component it finds unacceptable because it is inconsistent with its non-intrusiveness, containment, safety, or security requirements;

(e) no more than 50 days following its initial delivery to the point of entry, equipment shall be returned, in the same condition as that in which it was received, to the Verifying Party at the point of entry; and

(f) following receipt of the written evaluation provided by the Testing Party in accordance with subparagraph (d)(ii) of this paragraph, the Verifying Party may deliver to the Testing Party, for familiarization in accordance with procedures specified in subparagraphs (b) and (c) of this paragraph, modified or replacement equipment to eliminate the unacceptable characteristics specified by the Testing Party, after which the procedures specified in subparagraphs (d) and (e) of this paragraph shall be followed with respect to the modified or replacement equipment.

7. The following procedures shall apply to equipment for use of the hydrodynamic yield measurement method:

(a) with the exception of that equipment that the Verifying Party intends to use from the equipment stored in accordance with subparagraph (j) of this paragraph, no less than 60 days prior to the planned date of the beginning of emplacement of sensing

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elements and cables or the planned date of the beginning of emplacement of explosives, whichever occurs earlier, unless the Parties otherwise agree, the Verifying Party shall deliver in sealed containers to the point of entry, at its option, either one or two sets of all or part of the equipment specified in paragraphs 1(d), 1(e), 1(f), 1(g), 1(h), 1(i), 1(k), 3(i), and 3(j) of this Section;

(b) with the exception of that equipment that the Verifying Party intends to use from the equipment stored in accordance with subparagraph (j) of this paragraph, no less than 45 days prior to the planned date of the beginning of emplacement of sensing elements and cables, unless the Parties otherwise agree, the Verifying Party shall deliver in sealed containers to the point of entry two identical sets of the equipment specified in paragraphs 3(a), 3(b), 3(c), 3(d), and 3(e) of this Section, and, at its option, either one or two sets of the equipment specified in paragraphs 1(j), 3(f), 3(g), and 3(h) of this Section, and, if it has not been delivered in accordance with subparagraph (a) of this paragraph, the equipment specified in paragraphs 1(d), 1(e), 1(f), 1(g), 1(h), 1(i), and 1(k) of this Section;

(c) these sets of equipment shall have the same components with the same functional and technical descriptions and specifications as the equipment approved by the Testing Party in accordance with paragraph 6(d)(i) of this Section;

(d) no less than seven days prior to the date of delivery of equipment to the point of entry, the Verifying Party shall provide a complete inventory of this equipment, specifying which equipment, in accordance with subparagraph (h) of this paragraph, will be removed from the facilities of the Verifying Party immediately prior to the beginning of the final dry run and immediately prior to the test;

(e) if the Verifying Party provides two identical sets of equipment:

(i) the Testing Party shall choose, at the point of entry, one of the two identical sets of each type of equipment for use by Designated Personnel, with the exception of the equipment specified in paragraphs 3(a) and 3(b) of this Section, and shall affix its own seals to the sealed containers in which that set of equipment arrived. The set of equipment not chosen by the

Testing Party for use by Designated Personnel shall be subject to inspection by the Testing Party. Seals of the Verifying Party shall be removed from equipment chosen by the Testing Party for inspection, in the presence of personnel of both Parties, and thereafter this equipment shall be retained for inspection by the Testing Party without the presence of Designated Personnel for a period of no more than 30 days, after which time it shall be returned, in the same condition as that in which it was received, to the Verifying Party at the point of entry;

(ii) with respect to the equipment specified in paragraphs 3(a) and 3(b) of this Section, the Testing Party, under observation of Designated Personnel, shall remove the seals of the Verifying Party, combine the two sets of equipment, and randomly redistribute the items of each type of such equipment in order to produce two new identical sets. The Testing Party shall choose one of these new identical sets for use by Designated Personnel, and both Parties shall affix their own seals to the containers of that set. The set of equipment not chosen by the Testing Party for use by Designated Personnel shall be subject to inspection by the Testing Party in accordance with procedures specified in subparagraph (e)(iii) of this paragraph;

(iii) if the Verifying Party has delivered the equipment specified in paragraphs 3(a) and 3(b) of this Section with individual gas-blocking devices installed in the cables, Designated Personnel, under observation of personnel of the Testing Party, shall cut each cable at points three meters on either side of each gas-blocking device and shall place these gas-blocking devices and their attached cable segments in separate containers. If the Verifying Party delivered this equipment without individual gas-blocking devices installed, Designated Personnel, under observation of personnel of the Testing Party, shall cut a three-meter segment from each end of each cable and shall place these segments in separate containers. Personnel of each Party, under observation of personnel of the other Party, shall seal these separate containers of cable segments or gas-blocking devices with cable segments. The remainder of this equipment shall be retained for inspection by the Testing Party in accordance with subparagraph (e)(i) of this paragraph, except that during inspection of this equipment the Testing Party may remove up to 150 meters of cable from the set chosen for inspection, in no more segments than twice the number of cables in that set; the set of equipment not chosen by the Testing Party for use by Designated Personnel shall be subject to inspection by the Testing Party;

(iv) the Testing Party shall ensure protection of the equipment chosen by it for use by Designated Personnel and the sealed containers specified in subparagraph (e)(iii) of this paragraph while they are in its territory, and shall transport this equipment to the test site in such a manner as to ensure that it is delivered to Designated Personnel in the same condition as that in which it was received by the Testing Party. Prior to shipment to the test site, and from the time of its arrival at the test site until the time of its transfer to Designated Personnel, this equipment shall be kept sealed, in storage under conditions agreed upon by the Parties;

(v) personnel of the Testing Party shall consult with Designated Personnel regarding plans and schedule of shipment of the equipment no less than 48 hours prior to its shipment. Designated Personnel shall have the right to verify the integrity of their seals, to observe their equipment, and to accompany it from the point of entry to the test site. The equipment specified in subparagraph (a) of this paragraph shall be delivered to Designated Personnel for use at the test site no less than 25 days prior to the planned date of the beginning of emplacement of explosives or the planned date of the beginning of emplacement of sensing elements and cables, whichever occurs earlier, unless the Parties otherwise agree. The equipment specified in subparagraph (b) of this paragraph shall be delivered to Designated Personnel at the test site for use no less than 10 days prior to the planned date of the beginning of emplacement of sensing elements and cables, unless the Parties otherwise agree. Personnel of each Party shall remove their seals from the equipment under observation of personnel of the other Party. Prior to removing their seals, personnel of each Party shall have the right to verify the integrity of those seals, under observation of personnel of the other Party;

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(vi) seals affixed to the equipment specified in paragraphs 3(a), 3(b), and 3(d) of this Section shall not be removed prior to either the conduct of pressure tests and non-destructive inspections, in accordance with subparagraphs e(vii) and (e)(viii) of this paragraph, or preparation for installation of such equipment, at which time personnel of each Party shall remove their seals, under observation of personnel of the other Party. Prior to removing their seals, personnel of each Party shall have the right to verify the integrity of those seals, under observation of personnel of the other Party. Thereafter, personnel of the Testing Party shall have the right to observe all activities of Designated Personnel related to this equipment;

(vii) the Testing Party shall have the right to conduct pressure tests on the portions of cables with individual gas-blocking devices specified in subparagraph (e)(iii) of this paragraph, in accordance with its technical operations and practices and under observation of Designated Personnel, to ensure that the individual gas-blocking devices meet the containment requirements of the Testing Party. These pressure tests shall be conducted at a time specified by the Testing Party, at which time personnel of each Party shall verify the integrity of their seals on the containers specified in subparagraph (e)(iii) of this paragraph and shall remove their seals, under observation of personnel of the other Party. The Testing Party shall also have the right to conduct non-destructive inspections, under observation of Designated Personnel, on the set of cables chosen for use, to ensure that the cables chosen for use are identical in construction to those chosen for inspection. Such non-destructive inspections shall be carried out at a time specified by the Testing Party. All tests and non-destructive inspections related to the containment requirements of the Testing Party shall be completed, and the results communicated to the Designated Personnel Team Leader at the test site, no less than 10 days prior to the planned date for the beginning of emplacement of sensing elements and cables. If all of the individual gas-blocking devices removed from cables in the set chosen for inspection, in accordance with subparagraph (e)(iii) of this paragraph, successfully meet the containment requirements, and if cables chosen for use are found to be identical in construction to those chosen for inspection, then the set chosen for use shall be sealed by the seals of both Parties, which shall not be removed prior to preparation for installation of such equipment. Following the pressure tests, the Testing Party shall have the right to retain the individual gas-blocking devices with their attached cable segments from the set chosen for inspection;

(viii) if the Verifying Party delivered the equipment specified in paragraphs 3(a) and 3(b) of this Section without individual gas-blocking devices installed in the cables, the Testing Party shall have the right to conduct pressure tests, in accordance with its technical operations and practices, to ensure that the gas-blocking properties of these cables meet the containment requirements of the Testing Party. These tests shall be performed under observation of Designated Personnel on the segments of cables specified in subparagraph (e)(iii) of this paragraph as well as on a three-meter segment of each cable of the set chosen for use, removed by Designated Personnel, under observation of personnel of the Testing Party, from the end of the cable that will extend to the ground surface. These pressure tests shall be conducted at a time specified by the Testing Party, at which time personnel of each Party shall verify the integrity of their seals on the containers specified in subparagraph (e)(iii) of this paragraph, as well as on the containers with the set of equipment chosen for use, specified in paragraphs 3(a) and 3(b), and shall remove their seals under observation of personnel of the other Party. All tests related to the containment requirements of the Testing Party shall be completed, and the results communicated to the Designated Personnel Team Leader at the test site, no less than 10 days prior to the planned date for the beginning of emplacement of sensing elements and cables. If all of the cable segments removed from the set chosen for use and the set chosen for inspection meet the containment requirements of the Testing Party, then the set chosen for use shall be sealed by the seals of both Parties, which shall not be removed prior to preparation for installation of such equipment and its use in hydrodynamic yield measurements; and

(ix) if, within one day following the completion of testing and non-destructive inspections specified in subparagraphs (e)(vii) and (e)(viii) of this paragraph, the Verifying Party so requests, the Testing Party shall provide cables that meet its containment requirements. The Testing Party shall deliver these cables to Designated Personnel at the test site no more than two days following the request of the Verifying Party but no less than seven days prior to the planned date for the beginning of emplacement of sensing elements and cables, unless the Parties otherwise agree;

(f) if the Verifying Party provides only one set of equipment:

(i) upon arrival of the equipment at the point of entry, the seals of the Verifying Party shall be removed from this equipment in the presence of personnel of both Parties, after which the Testing Party shall have the right to inspect this equipment for no more than 30 days, without the presence of Designated Personnel;

(ii) upon completion of the inspection, the Testing Party shall transport all approved equipment to the test site and deliver it, in the same condition as that in which it was received, to Designated Personnel. The equipment specified in subparagraph (a) of this paragraph shall be delivered to Designated Personnel no less than 25 days prior to the planned date of the beginning of emplacement of explosives or the planned date of the beginning of emplacement of sensing elements and cables, whichever occurs earlier, unless the Parties otherwise agree. The equipment specified in subparagraph (b) of this paragraph shall be delivered to Designated Personnel at the test site no less than 10 days prior to the planned date of the beginning of emplacement of sensing elements and cables, unless the Parties otherwise agree; and

(iii) within five days following delivery of equipment to Designated Personnel, the Designated Personnel Team Leader shall certify, in writing, to the Representative of the Testing Party that the equipment delivered to the test site is in working condition or, in the event of damage to the equipment, shall report such damage in writing;

(g) upon completion of inspection of the equipment, in accordance with subparagraphs (e)(i) and (f)(i) of this paragraph, the Testing Party shall inform the Verifying Party, in writing, of any equipment that does not conform to that approved previously in accordance with paragraph 6(d)(i) of this Section and shall specify the non-conforming characteristics of any such equipment or component thereof. Prior to shipment to the test site, in the case of equipment provided in one set, or at the time of delivery to Designated Personnel at the test site of the set of equipment chosen for use, in the case of equipment provided in two sets, the equipment that does not conform to that approved previously shall be removed by Designated Personnel under observation of personnel of the Testing Party and placed under seals of both Parties in storage at a location chosen by the Testing Party. Any such equipment shall be returned by the Testing Party to Designated Personnel at the point of entry following completion of the activity related to verification for which it was originally provided. Except as otherwise provided in this Protocol, equipment approved by the Testing Party shall remain under the exclusive control of Designated Personnel from the time of its delivery to Designated Personnel at the test site until it is transferred to the Testing Party in accordance with subparagraph (i) of this paragraph;

(h) immediately prior to the beginning of the final dry run, Designated Personnel, under observation of personnel of the Testing Party, shall remove from each hydrodynamic recording facility and the command and monitoring facility all items specified in accordance with paragraph 6(c) of this Section for removal at that time. These items shall be placed under the seals of both Parties and stored at a location chosen by the Testing Party. Upon departure of personnel of both Parties from each hydrodynamic recording facility immediately prior to the test, all remaining maintenance and support equipment and spare parts shall be removed by Designated Personnel, unless the Parties otherwise agree;

(i) personnel of the Testing Party shall have the right to inspect equipment after it has been used for carrying out activities related to hydrodynamic yield measurements, for a period of 30 days, without the presence of Designated Personnel. For these purposes:

(i) the equipment used for carrying out activities specified in paragraphs 4(g), 5(c), and 5(f) or 5(g) or 5(h), and 6(b), 6(f), 7(c), and 7(f) or 7(g) or 7(h) of Section V of this Protocol shall be transferred to the Testing Party upon

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completion of all these activities, unless the Parties agree that equipment for any specific activity may be transferred upon completion of that activity;

(ii) all other equipment, except that specified in paragraphs 1(e), 1(g), 1(h), 1(i), and 1(k) of this Section, shall be transferred to the Testing Party upon completion of all activities specified in paragraphs 9(m) and 14(b) of Section V of this Protocol;

(iii) equipment specified in paragraphs 1(e), 1(g), 1(h), 1(i), and 1(k) of this Section shall be transferred to the Testing Party upon completion of all activities of Designated Personnel specified in Section V of this Protocol; and

(iv) during inspection of equipment specified in paragraphs 3(f) and 3(g) of this Section, after it has been used for carrying out activities related to hydrodynamic yield measurements, the Testing Party shall have the right to remove and retain no more than 150 meters of those cables, in no more segments than twice the number of cables in each set, with the exception of the fiber optic cables and the electrical cables for above-ground transmission of electrical power;

(j) the Verifying Party shall have the right to store for subsequent use part or all of its equipment in the territory of the Testing Party. Storage shall be under conditions agreed upon by the Parties, at a location chosen by the Testing Party and under its protection;

(k) with respect to inventory and shipment or storage of this equipment, the following procedures, at the option of the Verifying Party, shall be applied:

(i) upon transfer of equipment to the Testing Party for inspection, in accordance with subparagraph (i) of this paragraph, Designated Personnel shall provide complete inventories of equipment to be stored and equipment to be shipped to their territory. These inventories shall be signed by the Designated Personnel Team Leader and the Representative of the Testing Party, each of whom shall retain a copy of the inventories. Within five days following completion of inspection of equipment to be shipped, the Testing

Party shall return this equipment to Designated Personnel at the point of entry, in the same condition as that in which it was received. Elimination of information stored in memories shall not be deemed damage to the equipment; or

(ii) within five days following completion of inspection of equipment in accordance with subparagraph (i) of this paragraph, the Testing Party shall return this equipment to Designated Personnel at a location chosen by the Testing Party, in the same condition as that in which it was received. Elimination of information stored in memories shall not be deemed damage to the equipment. Designated Personnel shall examine, inventory, and pack their equipment in containers. Personnel of the Testing Party shall have the right to observe these activities. Within five days following receipt of their equipment, Designated Personnel shall transfer to the Testing Party the packed containers, along with inventories of the equipment to be stored and the equipment to be shipped. These inventories shall be signed by the Designated Personnel Team Leader and the Representative of the Testing Party, each of whom shall retain a copy of the inventories. Within 10 days following receipt of the equipment to be shipped, the Testing Party shall deliver it to the point of entry; and

(1) if stored equipment is to be used for activities related to verification of a subsequent test, it shall be subject to further inspection only after such use. The equipment specified in subparagraph (a) of this paragraph shall be delivered, in the same condition as that in which it was received, to Designated Personnel for use at the test site no less than 25 days prior to the planned date of the beginning of emplacement of explosives or the planned date of the beginning of emplacement of sensing elements and cables, whichever occurs earlier, unless the Parties otherwise agree. The equipment specified in subparagraph (b) of this paragraph shall be delivered, in the same condition as that in which it was received, to Designated Personnel at the test site no later than 10 days prior to the planned date of the beginning of emplacement of sensing elements and cables, unless the Parties otherwise agree.

8. The following procedures shall apply to equipment for use of the seismic yield measurement method:

(a) with the exception of that equipment that the Verifying Party intends to use from the equipment stored in accordance with subparagraph (h) of this paragraph, no less than 45 days prior to the planned date of the test, unless the Parties otherwise agree, the Verifying Party shall deliver in sealed containers to the point of entry, at its option, either one or two sets of all or part of the equipment specified in paragraphs 1(d), 1(e), 1(f), 1(g), 1(h), 1(i), and 4 of this Section;

(b) these sets of equipment shall have the same components with the same functional and technical descriptions and specifications as the equipment approved by the Testing Party in accordance with paragraph 6(d)(i) of this Section;

(c) no less than seven days prior to the date of delivery of equipment to the point of entry, the Verifying Party shall provide a complete inventory of this equipment;

(d) if the Verifying Party provides two identical sets of equipment:

(i) the Testing Party shall choose, at the point of entry, one of the two identical sets of each type of equipment for use by Designated Personnel, and shall affix its own seals to the sealed containers in which that set of equipment arrived;

(ii) the Testing Party shall ensure protection of this equipment while it is in its territory, and shall transport this equipment to the Designated Seismic Stations in such a manner as to ensure that it is delivered to Designated Personnel in the same condition as that in which it was received by the Testing Party. Prior to shipment to the Designated Seismic Stations, and from the time of its arrival at the Designated Seismic Stations until the time of its transfer to Designated Personnel, the set of equipment chosen by the Testing Party for use by Designated Personnel shall be kept sealed, in storage under conditions agreed upon by the Parties;

(iii) personnel of the Testing Party shall consult with Designated Personnel regarding plans and schedule of shipment of the equipment no less than 48 hours prior to its shipment. Designated Personnel shall have the right to verify the

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integrity of their seals, to observe their equipment, and to accompany it from the point of entry to the Designated Seismic Stations. This equipment shall be delivered to Designated Personnel at Designated Seismic Stations for installation and use no less than 10 days prior to the planned date of the test. Personnel of each Party shall remove their seals from the equipment under observation of personnel of the other Party. Prior to removing their seals, personnel of each Party shall have the right to verify the integrity of those seals, under observation of personnel of the other Party; and

(iv) seals of the Verifying Party shall be removed from equipment chosen by the Testing Party for inspection, in the presence of personnel of both Parties, and thereafter this equipment shall be retained for inspection by the Testing Party without the presence of Designated Personnel for a period of no more than 30 days, after which time it shall be returned, in the same condition as that in which it was received, to the Verifying Party at the point of entry;

(e) if the Verifying Party provides only one set of equipment:

(i) upon arrival of the equipment at the point of entry, the seals of the Verifying Party shall be removed from this equipment in the presence of personnel of both Parties, after which the Testing Party shall have the right to inspect this equipment for no more than 30 days, without the presence of Designated Personnel;

(ii) upon completion of the inspection, the Testing Party shall transport all approved equipment to the Designated Seismic Stations and deliver it, in the same condition as that in which it was received, to Designated Personnel no less than 10 days prior to the planned date of the test, unless the Parties otherwise agree; and

(iii) within three days following delivery of the equipment to Designated Personnel, the Designated Personnel Team Leader shall certify in writing to the Representative of the Testing Party that the equipment delivered to the Designated Seismic Station is in working condition or, in the event of damage to the equipment, shall report such damage in writing;

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(f) upon completion of inspection of the equipment, in accordance with subparagraphs (d)(iv) and (e)(i) of this paragraph, the Testing Party shall inform the Verifying Party, in writing, of any equipment that does not conform to that approved previously in accordance with paragraph 6(d)(i) of this Section and shall specify the non-conforming characteristics of any such equipment or component thereof. Prior to shipment to the Designated Seismic Station, in the case of equipment provided in one set, or at the time of delivery to Designated Personnel at the Designated Seismic Station of the set of equipment chosen for use, in the case of equipment provided in two sets, the equipment that does not conform to that approved previously shall be removed by Designated Personnel under observation of personnel of the Testing Party and placed under seals of both Parties in storage at a location chosen by the Testing Party. Any such equipment shall be returned by the Testing Party to Designated Personnel at the point of entry following completion of the activity related to verification for which it was originally provided. Except as otherwise provided in this Protocol, equipment approved by the Testing Party shall remain under the exclusive control of Designated Personnel from the time of its delivery to Designated Personnel at a Designated Seismic Station until it is transferred to the Testing Party in accordance with subparagraphs (g) and (j) of this paragraph;

(g) personnel of the Testing Party shall have the right to inspect equipment after it has been used for activities related to seismic yield measurements for a period of 30 days, without the presence of Designated Personnel. If the Testing Party decides to inspect that equipment, it shall be transferred to the Testing Party upon completion of activities specified in Section VI of this Protocol;

(h) the Verifying Party shall have the right to store for subsequent use part or all of its equipment in the territory of the Testing Party. Storage shall be under conditions agreed upon by the Parties, at a location chosen by the Testing Party and under its protection;

(i) if the Testing Party inspects the equipment, with respect to inventory and shipment or storage of this equipment, the following procedures, at the option of the Verifying Party, shall be applied:

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(i) upon transfer of equipment to the Testing Party for inspection in accordance with subparagraph (g) of this paragraph, Designated Personnel shall provide complete inventories of equipment to be stored and equipment to be shipped to their territory. These inventories shall be signed by the Designated Personnel Team Leader and the Representative of the Testing Party, each of whom shall retain a copy of the inventories. Within five days following completion of inspection of equipment to be shipped, the Testing Party shall return this equipment to Designated Personnel at the point of entry, in the same condition as that in which it was received. Elimination of information stored in memories shall not be deemed damage to the equipment; or

(ii) within five days following completion of inspection of equipment in accordance with subparagraph (g) of this paragraph, the Testing Party shall return this equipment to Designated Personnel at a location chosen by the Testing Party in the same condition as that in which it was received. Elimination of information stored in memories shall not be deemed damage to the equipment. Designated Personnel shall examine, inventory, and pack their equipment in containers. Personnel of the Testing Party shall have the right to observe these activities. Within five days following receipt of their equipment, Designated Personnel shall transfer to the Testing Party the packed containers, along with inventories of the equipment to be stored and the equipment to be shipped. These inventories shall be signed by the Designated Personnel Team Leader and the Representative of the Testing Party, each of whom shall retain a copy of the inventories. Within 10 days following receipt of equipment to be shipped, the Testing Party shall deliver it to the point of entry;

(j) if the Testing Party chooses not to inspect the equipment upon completion of activities related to seismic yield measurements, Designated Personnel shall prepare the equipment for storage or shipment to their territory prior to departure from the Designated Seismic Station and, upon transfer of equipment to the Testing Party, shall provide complete inventories of equipment to be stored and equipment to be shipped. These inventories shall be signed by the Designated Personnel Team Leader and the Representative of the Testing Party, each of whom shall retain a copy of the

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inventories. Equipment to be shipped shall be returned to the Verifying Party at the point of entry within 10 days following departure of Designated Personnel from the Designated Seismic Station. Equipment to be stored shall be prepared for storage, in accordance with agreed procedures for the conditions of storage chosen by the Testing Party; and

(k) if stored equipment is to be used for activities related to verification of a subsequent test, it shall be subject to further inspection only after such use. This equipment shall be delivered, in the same condition as that in which it was received, to Designated Personnel for use at the Designated Seismic Stations no later than 10 days prior to the planned date of the test, unless the Parties otherwise agree.

9. The following procedures shall apply to equipment for carrying out on-site inspection:

(a) with the exception of that equipment that the Verifying Party intends to use from the equipment stored in accordance with subparagraph (h) of this paragraph, no less than 55 days prior to the planned date of the beginning of emplacement of explosives, unless the Parties otherwise agree, the Verifying Party shall deliver in sealed containers to the point of entry, at its option, either one or two sets of all or part of the equipment specified in paragraphs 1(d), 1(e), 1(f), 1(g), 1(h), 1(i), 1(k), and 5 of this Section;

(b) these sets of equipment shall have the same components with the same functional and technical descriptions and specifications as the equipment approved by the Testing Party in accordance with paragraph 6(d)(i) of this Section;

(c) no less than seven days prior to the date of delivery of equipment to the point of entry, the Verifying Party shall provide a complete inventory of this equipment;

(d) if the Verifying Party provides two identical sets of equipment:

(i) the Testing Party shall choose, at the point of entry, one of the two identical sets of each type of equipment for use by Designated Personnel, and shall affix its own seals to the sealed containers in which that set of equipment arrived;

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(ii) the Testing Party shall ensure protection of this equipment while it is in its territory, and shall transport this equipment to the test site in such a manner as to ensure that it is delivered to Designated Personnel in the same condition as that in which it was received by the Testing Party. Prior to shipment to the test site, and from the time of its arrival at the test site until the time of its transfer to Designated Personnel, the set of equipment chosen by the Testing Party for use by Designated Personnel shall be kept sealed, in storage under conditions agreed upon by the Parties;

(iii) personnel of the Testing Party shall consult with Designated Personnel regarding plans and schedule of shipment of the equipment no less than 48 hours prior to its shipment. Designated Personnel shall have the right to verify the integrity of their seals, to observe their equipment, and to accompany it from the point of entry to the test site. This equipment shall be delivered to Designated Personnel at the test site no less than 20 days before the planned date of the beginning of emplacement of explosives, unless the Parties otherwise agree. Personnel of each Party shall remove their seals from the equipment under observation of personnel of the other Party. Prior to removing their seals, personnel of each Party shall have the right to verify the integrity of those seals, under observation of personnel of the other Party; and

(iv) seals of the Verifying Party shall be removed from equipment chosen by the Testing Party for inspection, in the presence of personnel of both Parties, and thereafter this equipment shall be retained for inspection by the Testing Party without the presence of Designated Personnel for a period of no more than 30 days, after which time it shall be returned, in the same condition as that in which it was received, to the Verifying Party at the point of entry;

(e) if the Verifying Party provides only one set of equipment:

(i) upon arrival of the equipment at the point of entry, the seals of the Verifying Party shall be removed from this equipment in the presence of personnel of both Parties, after which the Testing Party shall have the right to inspect this equipment for no more than 30 days, without the presence of Designated Personnel;

(ii) upon completion of the inspection, the Testing Party shall transport all approved equipment to the test site and deliver it, in the same condition as that in which it was received, to Designated Personnel no less than 20 days prior to the planned date of the beginning of emplacement of explosives, unless the Parties otherwise agree; and

(iii) within five days following delivery of equipment to Designated Personnel, the Designated Personnel Team Leader shall certify, in writing, to the Representative of the Testing Party that the equipment delivered to the test site is in working condition or, in the event of damage to the equipment, shall report such damage in writing;

(f) upon completion of inspection of the equipment in accordance with subparagraphs (d)(iv) and (e)(i) of this paragraph, the Testing Party shall inform the Verifying Party, in writing, of any equipment that does not conform to that approved previously in accordance with paragraph 6(d)(i) of this Section and shall specify the non-conforming characteristics of any such equipment or component thereof. Prior to shipment to the test site, in the case of equipment provided in one set, or at the time of delivery to Designated Personnel at the test site of the set of equipment chosen for use, in the case of equipment provided in two sets, the equipment that does not conform to that approved previously shall be removed by Designated Personnel under observation of personnel of the Testing Party and placed under seals of both Parties in storage at a location chosen by the Testing Party. Any such equipment shall be returned by the Testing Party to Designated Personnel at the point of entry, following completion of the activity related to verification for which it was originally provided. Except as otherwise provided in this Protocol, equipment approved by the Testing Party shall remain under the exclusive control of Designated Personnel from the time of its delivery to Designated Personnel at the test site until it is transferred to the Testing Party in accordance with subparagraph (g) of this paragraph;

(g) personnel of the Testing Party shall have the right to inspect equipment after it has been used for carrying out activities related to on-site inspection, for a period of 30 days, without the presence of Designated Personnel. For these purposes:

(i) the equipment used for carrying out activities specified in paragraphs 1(b), 1(c), 1(e), 1(f), 1(g), and 1(h) of Section VII of this Protocol shall be transferred to the Testing Party upon completion of all these activities, unless the Parties agree that equipment for any specific activity may be transferred upon completion of that activity; and

(ii) all other equipment shall be transferred to the Testing Party upon completion of all activities of Designated Personnel specified in Section VII of this Protocol;

(h) the Verifying Party shall have the right to store for subsequent use part or all of its equipment in the territory of the Testing Party. Storage shall be under conditions agreed by the Parties, at a location chosen by the Testing Party and under its protection;

(i) with respect to inventory and shipment or storage of this equipment, the following procedures, at the option of the Verifying Party, shall be applied:

(i) upon transfer of equipment to the Testing Party for inspection in accordance with subparagraph (g) of this paragraph, Designated Personnel shall provide complete inventories of equipment to be stored and equipment to be shipped to their territory. These inventories shall be signed by the Designated Personnel Team Leader and the Representative of the Testing Party, each of whom shall retain a copy of the inventories. Within five days following completion of inspection of the equipment to be shipped, the Testing Party shall return this equipment to Designated Personnel at the point of entry, in the same condition as that in which it was received. Elimination of information stored in memories shall not be deemed damage to the equipment; or

(ii) within five days following completion of inspection of equipment in accordance with subparagraph (g) of this paragraph, the Testing Party shall return this equipment to Designated Personnel at a location chosen by the Testing Party, in the same condition as that in which it was received. Elimination of information stored in memories shall not be deemed damage to the equipment. Designated Personnel shall examine, inventory, and pack their equipment in containers. Personnel of the Testing Party shall have the right to observe these activities. Within five days following receipt of their equipment, Designated Personnel shall transfer to the Testing Party the packed containers, along with inventories of the equipment to be stored and the equipment to be shipped. These inventories shall be signed by the Designated Personnel Team Leader and the Representative of the Testing Party, each of whom shall retain a copy of the inventories. Within 10 days following receipt of the equipment to be shipped, the Testing Party shall deliver it to the point of entry; and

(j) if stored equipment is to be used for activities related to verification of a subsequent test, it shall be subject to further inspection only after such use. This equipment shall be delivered, in the same condition as that in which it was received, to Designated Personnel at the test site no less than 20 days prior to the planned date of the beginning of emplacement of explosives for that test, unless the Parties otherwise agree.

SECTION IX. DESIGNATED PERSONNEL AND TRANSPORT PERSONNEL

1. No later than 10 days following entry into force of the Treaty each Party shall provide the other Party with a list of its proposed Designated Personnel who will carry out activities in accordance with this Protocol and a list of its proposed Transport Personnel who will provide transportation for these Designated Personnel, their baggage, and equipment of the Verifying Party. These lists shall contain name, date of birth, and sex of each individual of its proposed Designated Personnel and Transport Personnel. The list of Designated Personnel shall at no time include more than 300 individuals, and the list of Transport Personnel shall at no time include more than 200 individuals.

2. Each Party shall review the list of Designated Personnel and the list of Transport Personnel proposed by the other Party. If the Party reviewing a list determines that an individual included thereon is acceptable to it, it shall so inform the Party providing the list within 20 days

following receipt of the list, and such an individual shall be deemed accepted. If the Party reviewing a list determines that an individual included thereon is not acceptable to it, it shall so inform the Party providing the list of its objection within 20 days following receipt of the list, and such an individual shall be deemed unaccepted and shall be deleted from the list.

3. Each Party may propose the addition or substitution of individuals on its list of Designated Personnel or its list of Transport Personnel at any time, who shall be designated in the same manner as provided in paragraph 2 of this Section with regard to the initial lists. Annually, no more than 100 individuals from the list of Designated Personnel shall be subject to substitution. This limitation shall not apply to the replacement of individuals due to permanent physical incapacity or death, or to deletion of an individual from the list of Designated Personnel in accordance with paragraph 5 of this Section. Replacement of an individual due to permanent physical incapacity, death or deletion from the list shall be accomplished in the same manner as provided in paragraph 2 of this Section.

4. Following receipt of the initial list of Designated Personnel or the initial list of Transport Personnel or of subsequent changes thereto, the Party receiving such information shall prepare for the issuance of such visas and other documents as may be required to ensure that each individual on the list of Designated Personnel or the list of Transport Personnel who has been accepted may enter and remain in its territory for the purpose of carrying out activities in accordance with this Protocol. Such visas and documents shall be provided by the Testing Party only to the individuals whose names are included in the notification provided by the Verifying Party, in accordance with paragraphs 2 and 3 of Section X of this Protocol, upon receipt of such notification. Such visas and documents shall be valid for multiple entry throughout the period required for Designated Personnel to carry out their activities related to verification of a specific test.

5. If a Party determines that an individual included on the list of Designated Personnel or the list of Transport Personnel of the other Party has violated the provisions of this Protocol or has ever committed a criminal offense in its territory, or has ever been sentenced for committing a criminal offense, or has ever been expelled from its territory, the Party making such a determination shall notify the other Party of its objection to the continued inclusion of this individual on the list. If at that time this individual is present in the territory of the Party raising the objection, then the other Party shall

immediately recall this individual from the territory of the Party raising this objection and immediately thereafter delete that individual from the list of Designated Personnel or from the list of Transport Personnel.

6. Designated Personnel with their personal baggage and equipment of the Verifying Party shall be permitted to enter the territory of the Testing Party at the designated point of entry, to remain in that territory, and to exit that territory through the designated point of entry.

7. Designated Personnel and Transport Personnel shall be accorded the following privileges and immunities for the entire period they are in the territory of the Testing Party and thereafter with respect to acts previously performed in the exercise of their official functions as Designated Personnel or Transport Personnel:

(a) Designated Personnel and Transport Personnel shall be accorded the inviolability enjoyed by diplomatic agents pursuant to Article 29 of the Vienna Convention on Diplomatic Relations of April 18, 1961;

(b) living and working quarters occupied by Designated Personnel and Transport Personnel carrying out activities in accordance with this Protocol shall be accorded the inviolability and protection accorded the quarters of missions and diplomatic agents pursuant to Articles 22 and 30 of the Vienna Convention on Diplomatic Relations;

(c) archives, documents, papers, and correspondence of Designated Personnel and Transport Personnel shall enjoy the inviolability accorded the archives, documents, papers, and correspondence of missions and diplomatic agents pursuant to Articles 24 and 30 of the Vienna Convention on Diplomatic Relations. In addition, the aircraft or other transport vehicles of the Verifying Party shall be inviolable;

(d) Designated Personnel and Transport Personnel shall be accorded the immunities accorded diplomatic agents pursuant to paragraphs 1, 2, and 3 of Article 31 of the Vienna Convention on Diplomatic Relations. Immunity from jurisdiction of Designated Personnel or Transport Personnel may be waived by the Verifying Party in those cases in which it is of the opinion that immunity would impede the course of justice, and it can be waived without prejudice to the implementation of the provisions of this Protocol. Waiver must always be express;

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(e) Designated Personnel and Transport Personnel carrying out their activities in accordance with this Protocol shall be accorded the exemption from dues and taxes accorded diplomatic agents pursuant to Article 34 of the Vienna Convention on Diplomatic Relations;

(f) living and working quarters occupied by Designated Personnel and Transport Personnel carrying out their activities in accordance with this Protocol shall be accorded the exemption from dues and taxes accorded mission premises pursuant to Article 23 of the Vienna Convention on Diplomatic Relations; and

(g) Designated Personnel and Transport Personnel shall be permitted to bring into the territory of the Testing Party, without payment of any customs duties or related charges, articles for their personal use, with the exception of articles the import or export of which is prohibited by law or controlled by quarantine regulations.

8. Designated Personnel and Transport Personnel shall not engage in any professional or commercial activity for personal profit in the territory of the Testing Party.

9. Without prejudice to their privileges and immunities, Designated Personnel and Transport Personnel shall be obliged to respect the laws and regulations of the Testing Party and shall be obliged not to interfere in the internal affairs of that Party.

10. If the Testing Party considers that there has been an abuse of privileges and immunities specified in paragraph 7 of this Section, consultations shall be held between the Parties to determine whether such an abuse has occurred and, if so determined, to prevent a repetition of such an abuse.

SECTION X. ENTRY, TRANSPORT, FOOD, LODGING, AND PROVISION OF SERVICES FOR DESIGNATED PERSONNEL AND TRANSPORT PERSONNEL

1. The Testing Party shall ensure Designated Personnel and Transport Personnel access to its territory for the purposes of carrying out activities related to verification in accordance with this Protocol, and shall provide these personnel with such other assistance as may be necessary to enable them to carry out these activities. Designated Personnel shall have the right to be present at the test

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site and at Designated Seismic Stations in the territory of the Testing Party to carry out activities related to verification in accordance with this Protocol at such times and for such periods as required to carry out these activities. The specific times and periods for carrying out such activities shall be specified in the coordinated schedule.

2. No less than 20 days prior to the planned date of arrival of its Designated Personnel at the point of entry for participation in activities related to verification of a specific test, the Verifying Party shall provide the Testing Party with:

(a) a list of the names of the Designated Personnel with their passports and documentation, who will carry out activities related to verification of a specific test;

(b) the names of the Designated Personnel Team Leader or Leaders and the names of Designated Personnel who will escort equipment of the Verifying Party to the test site or each Designated Seismic Station;

(c) confirmation of the point of entry to be used;

(d) the planned date and the estimated time of arrival of these Designated Personnel at the point of entry; and

(e) the mode of transport to be used.

No more than 15 days following receipt of the list and passports and documentation specified in subparagraph (a) of this paragraph, the Testing Party shall return those passports to the Verifying Party with the visas and all necessary documents specified in paragraph 4 of Section IX of this Protocol.

3. No less than 20 days prior to the planned date of arrival of Transport Personnel at the point of entry, the Verifying Party shall provide the Testing Party with the number of Transport Personnel. No less than three days prior to the planned date of arrival of Transport Personnel, the Verifying Party shall provide the Testing Party with a list of the names of those Transport Personnel with their passports and documentation. No less than one day prior to the planned date of arrival of Transport Personnel, the Testing Party shall return those passports to the Verifying Party with the visas and all necessary documents specified in paragraph 4 of Section IX of this Protocol.

4. The number of Designated Personnel present at a test site or Designated Seismic Station to carry out activities related to verification of a specific test shall be governed by the relevant restrictions specified in Sections V, VI, and VII of this Protocol. Designated Personnel shall leave the test site or Designated Seismic Station upon completion of activities related to verification of a specific test as specified in the coordinated schedule. Designated Personnel who have been present at the test site for a period of six consecutive weeks or more may be replaced by individuals included on the list submitted in accordance with paragraph 1 of Section IX of this Protocol. Designated Personnel who have not been present at the test site for a period of six consecutive weeks may be replaced only for reasons of injury, illness, or family emergency, and shall be replaced by individuals included on the list submitted in accordance with paragraph 1 of Section IX of this Protocol.

5. If a transport aircraft other than a regularly scheduled commercial aircraft is used by the Verifying Party for transportation between the territory of the Verifying Party and the point of entry, its flight path shall be along airways agreed upon by the Parties, and its flight plan shall be filed in accordance with the procedures of the International Civil Aviation Organization applicable to civil aircraft, including in the remarks section of the flight plan a confirmation that the appropriate clearance has been obtained. The Testing Party shall provide parking, security protection, servicing, and fuel for aircraft of the Verifying Party at the point of entry. The Verifying Party shall bear the cost of such fuel and servicing.

6. The Testing Party shall ensure that all necessary clearances or approvals are granted so as to enable Designated Personnel, their baggage, and equipment of the Verifying Party to arrive at the point of entry by the estimated arrival date and time.

7. The Testing Party shall assist Designated Personnel and Transport Personnel and their baggage in passage through customs without undue delay. The Testing Party shall provide transportation between the point of entry and the test site or the Designated Seismic Stations for Designated Personnel, their baggage, and equipment of the Verifying Party, so as to enable such personnel to exercise their rights and functions in the time periods provided in this Protocol and specified in the coordinated schedule.

8. The Testing Party shall have the right to assign its personnel to escort Designated Personnel and Transport Personnel while they are in its territory.

9. Except as otherwise provided in this Protocol, movement and travel of Designated Personnel and Transport Personnel in the territory of the Testing Party, from the time of their arrival at the point of entry until their departure from the territory of the Testing Party at the point of entry, shall be subject to the authorization of the Testing Party.

10. During the period Designated Personnel and Transport Personnel are in the territory of the Testing Party, the Testing Party shall provide food, hotel-like living accommodations, working facilities, transportation, and medical services for such personnel, including access to its medical facilities for out-patient treatment and in-patient treatment, and also secure places for storing equipment. If the Verifying Party desires to provide its own food for its Designated Personnel and its Transport Personnel during their stay in the territory of the Testing Party, the Testing Party shall provide such assistance as may be necessary for such food to arrive at the appropriate locations. Designated Personnel shall have the use of a complete kitchen at all times during their stay at the test site and at each Designated Seismic Station.

11. The Verifying Party shall have the right to include among its Designated Personnel a medical specialist, who shall be allowed to bring medications, medical instruments, and portable medical equipment agreed upon by the Parties. If Designated Personnel are treated in a medical facility of the Testing Party, the medical specialist shall have the right to consult on the recommended treatment and monitor the course of medical treatment at all times. The medical specialist of the Verifying Party shall have the right to require the Testing Party to provide emergency evacuation of any individual of the Designated Personnel who is ill or has suffered an accident to a mutually agreed medical facility in the territory of the Testing Party or to the point of entry for emergency medical evacuation by the Verifying Party. Designated Personnel shall have the right to refuse any treatment prescribed by medical personnel of the Testing Party, and in this case the Testing Party shall not be responsible for any consequences of such refusal. Such refusal must always be express.

12. The Testing Party shall provide the Designated Personnel Team Leader or his designated representative at all times access to:

(a) telephone communications between the embassy of the Verifying Party in the territory of the Testing Party and the working facilities and living accommodations of Designated Personnel at each test site and each Designated Seismic Station; and

(b) an international telephone network from their working facilities and living accommodations at each test site and each Designated Seismic Station.

13. The Designated Personnel Team Leader or his designated representative shall have the right to use at all times satellite communications to ensure communications via the International Maritime Satellite Organization (INMARSAT) commercial satellite system, or a system of equivalent performance, between each test site in the territory of the Testing Party and the telephone communications system of the Verifying Party. If the Testing Party does not provide such communications, Designated Personnel shall have the right to use their own equipment specified in paragraph 1(k) of Section VIII of this Protocol. In this case, installation and alignment of all such equipment shall be done jointly. All equipment of this system, except the remote control unit, shall be locked and placed under seals of both Parties, and personnel of neither Party shall have access to this equipment except under observation of personnel of the other Party. Only Designated Personnel shall use the remote control unit. If the Verifying Party provides satellite communications equipment, personnel of the Testing Party shall have the right, under observation of Designated Personnel, to make the following modifications provided they do not degrade the quality of the communications:

(a) install bandpass filters, to limit the frequency range, in the antenna signal transmission and reception lines;

(b) modify the remote control unit to prevent manual tuning; and

(c) modify the satellite communications equipment to allow the Testing Party to monitor all transmissions.

14. The Testing Party shall provide the following for use by Designated Personnel:

(a) portable radios for communications at the test location;

(b) telephones for communications between work areas and between work areas and living quarters of Designated Personnel at the test site or Designated Seismic Stations; and

(c) access to Testing Party-controlled vehicle-mounted radios for communications with the test location, work areas, or living quarters while Designated Personnel are in transit at the test site.

15. At the test site and each Designated Seismic Station, Designated Personnel shall observe all safety rules and regulations applicable to the personnel of the Testing Party, as well as all those additional restrictions with regard to access and movement as may be established by the Testing Party. Designated Personnel shall have access only to the areas in which they will directly exercise their rights and functions in accordance with Sections V, VI, VII, and VIII of this Protocol. The areas at the test site or the Designated Seismic Station in which Designated Personnel shall have freedom of movement during the conduct of a specific test without the mandatory escort of personnel of the Testing Party shall be marked on the diagrams of the test site or the Designated Seismic Stations provided to the Verifying Party at the first meeting of the Coordinating Group specified in paragraph 10 of Section XI of this Protocol. In all other cases, the permission of the Representative of the Testing Party, and escort by, personnel of the Testing Party shall be required.

16. Designated Personnel shall not be given or seek access by physical, visual, or technical means to the interior of any explosive canister, to documentary or other information descriptive of the design of an explosive, or to equipment for control and firing of an explosive. The Testing Party shall not locate documentary or other information descriptive of the design of an explosive in such ways as to impede Designated Personnel in carrying out their activities in accordance with this Protocol.

17. Possession or use by Designated Personnel of firearms, ammunition, or substances containing narcotics, with the exception of those prescribed by a physician, in the territory of the Testing Party is prohibited. Except as otherwise provided in this Protocol, possession or use by Designated Personnel of the following items is also prohibited at the test site or a Designated Seismic Station:

(a) photographic and video recording equipment;

(b) radio transmitters or receivers other than those supplied by the Testing Party;

(c) sound recorders;

(d) teleoptical devices; and

(e) personal computers.

18. Except as otherwise provided in this Protocol or as may be approved in writing by the Representative of the Testing Party, Designated Personnel are prohibited from removing any of the following items from the test site or a Designated Seismic Station:

(a) soil samples;

(b) plant samples;

(c) water and air samples;

(d) animals;

(e) metal objects; and

(f) rock samples or debris.

19. Designated Personnel shall have the right to remove from the territory of the Testing Party all items, including data, obtained in accordance with this Protocol.

20. The Testing Party shall have the right to inspect, in the presence of Designated Personnel, baggage and personal possessions of Designated Personnel upon their entry to or departure from the test site or Designated Seismic Stations. The Testing Party shall also have the right to inspect, in the presence of Designated Personnel, any packages received by Designated Personnel during their stay at the test site or Designated Seismic Stations or prepared for shipment by Designated Personnel from the test site or Designated Seismic Stations.

21. Except as provided in paragraphs 22, 23, and 24 of this Section or unless the Parties otherwise agree, the Verifying Party shall bear all costs of verification activities of Designated Personnel and Transport Personnel set forth in the coordinated schedule, including costs for use or consumption of materials, equipment, transportation, food, living and working facilities, medical assistance, communications, and services requested by and provided to the Verifying Party. The Verifying Party shall also bear the costs associated with transport aircraft in accordance with paragraph 5 of this Section.

22. The Testing Party shall bear all costs related to the preparation of its test sites, Designated Seismic Stations, and equipment storage facilities within its territory for the use of Designated Personnel as provided for in this Protocol.

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23. With respect to a test of non-standard configuration:

(a) the Testing Party shall bear the costs of the activities specified in paragraph 6(a) of Section V of this Protocol that are carried out with respect to the second and third satellite holes, if requested by the Verifying Party in accordance with paragraph 11 of Section XI of this Protocol; and

(b) the Testing Party shall bear the costs related to the conduct of a test identified by it as a reference test to satisfy the request of the Verifying Party in accordance with paragraph 11 of Section XI of this Protocol.

24. The Testing Party shall bear all costs related to transportation of equipment of the Verifying Party between:

(a) the point of entry and the location at which such equipment is subject to familiarization or inspection by the Testing Party in accordance with Section VIII of this Protocol;

(b) the location for familiarization or inspection by the Testing Party and the location at which such equipment is returned to the Verifying Party;

(c) the location at which such equipment is turned over to the Testing Party for storage and the storage location; and

(d) the storage location and the location at which such equipment is returned to the Verifying Party.

25. If the Verifying Party decides not to carry out activities related to verification that it specified in its initial notification, after technical and logistical support for these activities has been agreed upon in the Coordinating Group in accordance with paragraph 12 of Section XI of this Protocol, the Verifying Party shall reimburse the Testing Party for the costs of such agreed technical and logistical support incurred by the Testing Party prior to receipt of notification that the Verifying Party will not carry out the initially declared activities related to verification.

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SECTION XI. PROCEDURES FOR CONSULTATION AND COORDINATION

1. For the purposes of implementation of the Treaty and this Protocol, the Parties shall, immediately following entry into force of the Treaty, establish a Bilateral Consultative Commission, within the framework of which they shall meet, at the request of either Party, to:

(a) consider any questions relating to implementation of the Treaty and this Protocol;

(b) consider any suggestions for amendments to the Treaty or this Protocol;

(c) consider any technical or administrative changes to this Protocol of the nature provided in paragraph 2, 3, or 4 of this Section;

(d) consider any questions relating to compliance with the Treaty and this Protocol;

(e) consider any new verification technologies having a bearing on the Treaty or this Protocol;

(f) seek agreement on those matters specified in this Protocol as requiring agreement of the Parties; and

(g) seek agreement on questions related to costs for verification activities and procedures for reciprocal payments of such costs between the Parties.

2. If the Parties determine that the periods of time specified with respect to notifications in Section IV of this Protocol create practical difficulties and do not serve the interest of effective implementation of this Protocol, they may change such periods of time by agreement in the Bilateral Consultative Commission. Such agreed changes shall not be considered amendments to the Treaty or this Protocol.

3. If the Parties determine that, in the interest of effective implementation of this Protocol, the arrangements set forth in Section X of this Protocol regarding transportation, lodging, food, and services require modification, the provisions of Section X of this Protocol may be changed by agreement of the Parties in the Bilateral Consultative Commission. Such agreed changes shall not be considered amendments to the Treaty or this Protocol.

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4. If the Parties determine that modifications to verification procedures, including modifications resulting from improvements in existing technologies, would enhance effective implementation of the basic aims of the Treaty or this Protocol, they may, in the Bilateral Consultative Commission, agree upon such modifications. Such agreed modifications shall not be considered amendments to the Treaty or this Protocol.

5. The Parties, through consultation, shall establish, and may amend as appropriate, regulations to govern the operations of the Bilateral Consultative Commission.

6. For each test with respect to which activities related to verification are carried out in accordance with this Protocol, the Parties shall establish a Coordinating Group of the Bilateral Consultative Commission that shall be responsible for coordinating the activities of the Verifying Party with the activities of the Testing Party. The Bilateral Consultative Commission may, as necessary, establish and amend procedures governing the activities of the Coordinating Group.

7. The Coordinating Group shall operate throughout the entire period of preparing and carrying out activities related to verification of a specific test, until departure of Designated Personnel from the territory of the Testing Party.

8. All members of the Coordinating Group from the Verifying Party shall be drawn from the list of Designated Personnel. The Representative of the Verifying Party to the Coordinating Group shall be the Principal Designated Personnel Team Leader, whose name shall be provided simultaneously with the notification of intent to carry out activities related to verification of a specific test. Within 15 days following receipt of this notification, the Testing Party shall provide the Verifying Party with the name of its Representative to the Coordinating Group.

9. The first meeting of the Coordinating Group shall be convened in the capital of the Testing Party within 25 days following notification by the Verifying Party that it intends to carry out activities related to verification of a specific test. Thereafter, the Coordinating Group shall meet at the request of either Party.

10. On the first day of the first meeting of the Coordinating Group, the Testing Party shall present a list, including times and durations, of all activities it intends to carry out that could affect the rights of the Verifying Party provided in this Protocol with respect to activities

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declared by it and related to verification of a specific test. If the Verifying Party has provided notification of its intent:

(a) to use the hydrodynamic yield measurement method or carry out an on-site inspection, the Testing Party shall provide the Verifying Party with the following information:

(i) the number of emplacement holes for the specific test;

(ii) with respect to each emplacement hole, whether, for the purposes of this Protocol, the emplacement hole shall be deemed vertical or horizontal; and

(iii) the number of explosions included in the test and the location of each planned end of each emplacement hole and of the corresponding planned emplacement point, to the nearest 10 meters;

(b) to use the hydrodynamic yield measurement method with respect to a test of standard configuration that includes more than one explosion, the Testing Party shall provide, in addition to the information specified in subparagraph (a) of this paragraph, the following information:

(i) whether any explosion has a planned yield exceeding 50 kilotons, and, if so, which explosion or explosions; and

(ii) whether any explosion has a planned yield exceeding 35 kilotons, and, if so, which explosion or explosions; and

(c) to use the hydrodynamic yield measurement method with respect to a test of non-standard configuration, the Testing Party shall provide the information specified in subparagraphs (a) and (b) of this paragraph, as well as the following information:

(i) a detailed description, including dimensions, of each emplacement hole and any access or bypass tunnels connected to each emplacement hole if any portion of an access or bypass tunnel is within the hydrodynamic measurement zone;

(ii) the dimensions of each explosive canister and its orientation in the emplacement hole;

(iii) the density and dimensions of each choke section; and

(iv) the location and configuration of any access or bypass tunnels and any known voids with a volume larger than one cubic meter, within 50 meters of the wall of each emplacement hole within the hydrodynamic measurement zone, and the bulk density of the stemming material if these voids are to be stemmed.

11. Within 15 days following the convening of the first meeting of the Coordinating Group, the Verifying Party shall provide the Testing Party, in the Coordinating Group, with a list of the activities it intends to carry out, as well as those activities provided for in this Protocol that it intends not to carry out. The Verifying Party shall also provide the Testing Party, in the Coordinating Group, with a preliminary statement of its requirements for technical and logistical support for the activities related to verification that it intends to carry out and whether it will require the Testing Party to provide the cables specified in paragraphs 3(a) and 3(b) of Section VIII of this Protocol for its use. If the Verifying Party has notified the Testing Party that it intends to use the hydrodynamic yield measurement method with respect to a test of non-standard configuration, the Verifying Party also shall inform the Testing Party:

(a) whether it requires a reference test; and

(b) whether it will actually carry out hydrodynamic yield measurements of the test of non-standard configuration, and, if so, which measurements, and:

(i) the number of satellite holes required and the specific distance and azimuth relative to the emplacement hole of the second and third satellite holes, if such are requested by the Verifying Party and, if the Testing Party is unable to prepare the first satellite hole in accordance with the conditions for such hole in the standard configuration, the distance and azimuth of that satellite hole relative to the emplacement hole; and

(ii) in which satellite holes the Verifying Party intends to use transducers and associated power supplies.

12. Within 10 days following receipt by the Testing Party of the information specified in paragraph 11 of this Section, the Parties, in the Coordinating Group, shall develop and agree upon a coordinated schedule, which shall include specific times and durations for carrying out activities related to verification, ensuring the rights of each Party provided in this Protocol, and taking into account the number of Designated Personnel that will carry out activities related to verification of a specific test in accordance with Sections V, VI, and VII of this Protocol. The coordinated schedule shall reflect those numbers.

13. Agreement of the Representative of each Party to the Coordinating Group shall constitute agreement of the Parties for the purposes of this Protocol with the exception of paragraphs 3, 4, 5, 6, and 9 of Section III of this Protocol and paragraph 2 of Section XII of this Protocol.

14. Upon completion of activities related to verification of a specific test, the Designated Personnel Team Leader at the test site or at each Designated Seismic Station shall prepare a written report, in the language of each Party. The report shall be factual. It shall list activities carried out by Designated Personnel, with dates of their completion, and shall include lists of information, data, photographs, and samples obtained by Designated Personnel or provided by the Testing Party in accordance with this Protocol. The report shall list technical and logistical activities carried out by the Testing Party in support of activities related to verification. The Designated Personnel Team Leader shall include in the report comments on any ambiguities not resolved during the carrying out of activities related to verification. The Representative of the Testing Party may include in the report comments responding to these ambiguities. The Designated Personnel Team Leader shall complete the report prior to the scheduled departure of Designated Personnel from the test site or Designated Seismic Station. The Designated Personnel Team Leader and the Representative of the Testing Party shall each sign the report and retain a copy.

15. If, in the course of implementing activities related to verification of a specific test, in accordance with this Protocol, questions arise requiring prompt resolution, such questions shall be considered by the Coordinating Group. If the Coordinating Group is unable to resolve such questions, they shall immediately be referred to the Bilateral Consultative Commission for resolution.

SECTION XII. RELEASE OF INFORMATION

1. Nothing in the Treaty and this Protocol shall affect the proprietary rights of either Party in information provided by it in accordance with the Treaty and this Protocol, or in information that may be disclosed to the other Party or that may become known to the other Party in preparing for or conducting a test. Claims to such proprietary rights, however, shall not impede implementation of the provisions of the Treaty and this Protocol.

2. Public release of the information provided in accordance with this Protocol or publication of material using such information may take place only with the agreement of the Testing Party. Public release of the results of observation or measurements made by Designated Personnel may take place only with the agreement of both Parties.

SECTION XIII. ENTRY INTO FORCE

This Protocol is an integral part of the Treaty. It shall enter into force on the date of entry into force of the Treaty and shall remain in force as long as the Treaty remains in force.

DONE at Washington, in duplicate, this first day of June, 1990, in the English and Russian languages, both texts being equally authentic.

FOR THE UNITED STATES OF AMERICA:	FOR THE UNION OF SOVIET SOCIALIST REPUBLICS:
President of the United States of America	President of the Union of Soviet Socialist Republics

PROTOCOL TO THE TREATY BETWEEN THE UNITED STATES OF AMERICA AND THE UNION OF SOVIET SOCIALIST REPUBLICS ON UNDERGROUND NUCLEAR EXPLOSIONS FOR PEACEFUL PURPOSES

The United States of America and the Union of Soviet Socialist Republics, hereinafter referred to as the Parties,

Confirming the provisions of the Treaty Between the United States of America and the Union of Soviet Socialist Republics on Underground Nuclear Explosions for Peaceful Purposes of May 28, 1976, hereinafter referred to as the Treaty,

Taking into account the fact that nuclear explosions for peaceful purposes are conducted outside national nuclear test sites under various geological conditions,

Convinced of the necessity to ensure effective verification of compliance with the Treaty,

Have agreed as follows:

SECTION I. DEFINITIONS

In addition to the definitions of terms set forth in Article II of the Treaty, for the purposes of this Protocol:

1. The term "emplacement hole" means the entire interior of any drill hole, shaft, adit or tunnel in which an explosive, associated cables, and other equipment are installed for the purposes of carrying out an explosion.

2. The term "Verifying Party" means the Party entitled to carry out, in accordance with this Protocol, activities related to verification of compliance with the Treaty by the Party carrying out an explosion.

3. The term "Designated Personnel" means personnel appointed by the Verifying Party from among its nationals and included on its list of Designated Personnel, in accordance with Section IX of this Protocol, to carry out activities related to verification, in accordance with this Protocol, in the territory of the Party carrying out the explosion.

4. The term "Transport Personnel" means personnel appointed by the Verifying Party from among its nationals and included on its list of Transport Personnel, in accordance with Section IX of this Protocol, to provide transportation for Designated Personnel, their baggage, and equipment of the Verifying Party between the territory of the Verifying Party and the point of entry in the territory of the Party carrying out the explosion.

5. The term "point of entry" means Washington, D.C. (Dulles International Airport) with respect to the United States of America; and Moscow (Sheremetyevo-2 Airport) with respect to the Union of Soviet Socialist Republics. Other locations may serve as points of entry for specific explosions, as agreed by the Parties.

6. The term "on-site inspection" means activities carried out by the Verifying Party in the territory of the Party carrying out the explosion, in accordance with Section VII of this Protocol, for the purposes of independently obtaining data on conditions under which the explosion will be conducted and confirming the validity of data provided by the Party carrying out the explosion.

7. The term "hydrodynamic yield measurement method" means the method whereby the yield of an explosion is derived from on-site, direct measurement of the position

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of the shock front as a function of time during the hydrodynamic phase of the ground motion produced by the explosion.

8. The term "local seismic network" means the array of seismic stations and the control point temporarily deployed, in accordance with this Protocol, for the purpose of identifying the number of individual explosions in a specific group explosion.

9. The term "Joint Consultative Commission" means the Commission established in accordance with Article V of the Treaty.

10. The term "Coordinating Group" means a working group of the Joint Consultative Commission, established in accordance with Section XI of this Protocol.

11. The term "Nuclear Risk Reduction Centers" means the Centers located in Washington, D.C., and Moscow, established in accordance with the Agreement Between the United States of America and the Union of Soviet Socialist Republics on the Establishment of Nuclear Risk Reduction Centers of September 15, 1987.

SECTION II. EXPLOSION DEPTH AND COMPOSITION

1. No explosion shall be conducted at a distance in meters from the ground surface less than 30 times the 3.4 root of the planned yield of that explosion in kilotons.

2. No group explosion shall have an aggregate yield exceeding 150 kilotons unless the Parties agree on specific procedures to implement appropriate provisions of this Protocol so as to permit identification of each individual explosion and determination of the yield of each individual explosion in the group.

3. No explosion having a planned yield exceeding 35 kilotons shall be conducted in a cavity having a volume exceeding 20,000 cubic meters, unless the Parties agree on verification measures for such an explosion.

SECTION III. VERIFICATION MEASURES

1. For the purposes of the Treaty, all underground nuclear explosions conducted outside national nuclear test

sites shall be considered underground nuclear explosions for peaceful purposes subject to all the provisions of the Treaty. For purposes of verification of compliance with the Treaty, in addition to using available national technical means, the Verifying Party shall have the right:

(a) to use the hydrodynamic yield measurement method, in accordance with Section V of this Protocol, to measure the yield of each explosion that the Party carrying out the explosion notifies, in accordance with paragraph 3 of Section IV of this Protocol, to have a planned yield exceeding 50 kilotons;

(b) to use the hydrodynamic yield measurement method, in accordance with Section V of this Protocol, to monitor the yield of each individual explosion in a group explosion that the Party carrying out the explosion notifies, in accordance with paragraph 3 of Section IV of this Protocol, to have a planned aggregate yield exceeding 50 kilotons;

(c) to use, in conjunction with the use of the hydrodynamic yield measurement method, a local seismic network, in accordance with Section VI of this Protocol, for each group explosion that the Party carrying out the explosion notifies, in accordance with paragraph 3 of Section IV of this Protocol, to have a planned aggregate yield exceeding 150 kilotons; and

(d) to carry out on-site inspection, in accordance with Section VII of this Protocol, with respect to any explosion that the Party carrying out the explosion notifies, in accordance with paragraph 3 of Section IV of this Protocol, to have a planned yield exceeding 35 kilotons and, with respect to any explosion having a planned yield exceeding 50 kilotons, only if the Verifying Party has decided not to use the hydrodynamic yield measurement method.

2. The Party carrying out the explosion shall bear full responsibility for, and have exclusive control over, the conduct of the explosion.

3. Designated Personnel shall be responsible for the working of their equipment, its timely installation and operation, for participating in such operations, including dry runs, as the Party carrying out the explosion may request, and for recording data at the time of the explosion. The Party carrying out the explosion shall be under no obligation to change the time of the explosion because of any malfunction of the equipment of the Verifying Party or inability of Designated Personnel to carry out their functions, unless actions of the Party carrying out the explosion have caused such a situation to arise.

SECTION IV. NOTIFICATIONS AND INFORMATION RELATING TO EXPLOSIONS

1. Unless the Parties otherwise agree, all notifications provided for in this Protocol shall be transmitted through the Nuclear Risk Reduction Centers. The Nuclear Risk Reduction Centers may also be used, as appropriate, to transmit other information provided in accordance with this Protocol.

2. Not later than July 1 following entry into force of the Treaty, and each July 1 thereafter, each Party shall inform the other Party whether or not it intends to conduct, during the following calendar year, any individual or group explosion for peaceful purposes having a planned aggregate yield exceeding 35 kilotons, and, if so, how many. On the date of entry into force of the Treaty, information specified by this paragraph shall be provided by each Party for the remainder of the calendar year in which the Treaty enters into force and for the period from January 1 through December 31 of the succeeding year. In the event of changes in the information provided in accordance with this paragraph, such changes shall be immediately provided to the other Party.

3. No less than 180 days prior to the planned date of the beginning of emplacement of the explosive or explosives for every explosion having a planned yield exceeding 35 kilotons, the Party carrying out the explosion shall notify the Verifying Party of its intention to carry out the explosion and shall provide the Verifying Party with the following information, to the extent and degree of accuracy available at the time when it is provided:

(a) the planned date of the explosion;

(b) the planned date of the beginning of emplacement of the explosive or explosives;

(c) the purpose of the explosion;

(d) the location of the explosion, expressed in geographic coordinates to the nearest minute;

(e) the planned yield of the explosion;

(f) the number of explosives, and the planned yield of each individual explosive;

(g) the planned depth of emplacement of each explosive to the nearest 10 meters;

(h) the type or types of rock in which the explosion will take place, including the depth of the water table; and

(i) a description of specific technological features of the project of which the explosion is a part that may affect determination of its yield and confirmation of its purpose.

4. Following receipt of information specified in paragraph 3 of this Section, the Verifying Party shall inform the Party carrying out the explosion, no less than 150 days prior to the planned date of the beginning of emplacement of explosives, in a single notification, whether or not it intends to carry out one of the following activities related to verification:

(a) with respect to an explosion having a planned yield exceeding 35 kilotons, to carry out on-site inspection in accordance with Section VII of this Protocol; or

(b) with respect to an explosion having a planned yield exceeding 50 kilotons, to use the hydrodynamic yield measurement method, in accordance with Section V of this Protocol, and, with respect to a group explosion having a planned aggregate yield exceeding 150 kilotons, to use, in conjunction with the hydrodynamic yield measurement method, a local seismic network, in accordance with Section VI of this Protocol.

5. If the Verifying Party:

(a) declares its intention not to conduct activities described in paragraphs 4(a) and 4(b) of this Section, it shall thereby forfeit its right to conduct such activities unless the Party carrying out the explosion provides notification, in accordance with paragraph 9 of this Section, of a change in the location by more than one minute of latitude or longitude or of a change in the planned date of the explosion that changes the date indicated in the initial notification by 60 days or more. Within 30 days of notification by the Party carrying out the explosion of any such change in location or planned date of the explosion, the Verifying Party shall have the right to revise the notification it provided in accordance with paragraph 4 of this Section. In the event the Verifying Party elects to revise its notification and to use the hydrodynamic yield measurement method or to carry out on-site inspection, the beginning of emplacement of explosives shall not occur less than 90 days from the date of the Verifying Party's revised notification, unless the Parties otherwise agree. The Party carrying out the explosion shall thereafter provide the Verifying Party with the information specified in paragraph 6 or 7 of this Section; or

(b) decides not to conduct the activities related to verification specified by it in its initial notification, after technical and logistical support requirements for these activities have been agreed upon in the Coordinating Group, in accordance with paragraph 6 of Section XI of this Protocol, the Verifying Party shall reimburse the Party carrying out the explosion for costs for such technical and logistical support incurred by the Party carrying out the explosion prior to receipt of notification that the Verifying Party will not carry out the initially-declared activities related to verification.

6. In the event of receipt by the Party carrying out the explosion of notification from the Verifying Party of its intent to use the hydrodynamic yield measurement method, the Party carrying out the explosion shall provide the Verifying Party not less than 60 days prior to the planned date of the beginning of emplacement of explosives with the following information:

(a) the number of explosives; the planned yield of each explosive; the planned depth of emplacement of each explosive with an accuracy of 10 meters; the planned point of emplacement of each explosive to be used in a group explosion relative to all other explosives in the group with an accuracy of 10 percent of the distance between that explosive and the nearest other explosive, but in no case shall the error be greater than 100 meters; and the planned time intervals between individual explosions in each group explosion with an accuracy of 0.1 second;

(b) a description of the geological and geophysical characteristics of the site of each explosion that could influence determination of the yield, which shall include: the depth of the water table; a stratigraphic column above each emplacement point; the position of each emplacement point relative to nearby geological and other features that influenced the design of the project of which the explosion is a part; and the estimated physical parameters of the rock within each hydrodynamic measurement zone, including bulk density, grain density, compressional and shear-wave velocities, porosity, and total water content;

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(c) the locations and purposes of facilities and installations that are associated with the conduct of the explosion;

(d) the planned date of the beginning of emplacement of each explosive;

(e) a topographic chart, marked with geographic coordinates accurate to one minute of latitude and longitude, of the areas circumscribed by circles of 15 kilometer radius centered on points on the surface of the earth above the points of emplacement of each explosive, at a scale of 1:24,000 or 1:25,000 with a contour interval of 10 meters or less. The planned location of each explosive shall be marked on this chart with an accuracy of 50 meters;

(f) the length of each canister in which an explosive will be contained, hereinafter referred to as an explosive canister;

(g) the dimensions of any pipe or other device that will be used to emplace each explosive canister;

(h) the planned cross-sectional dimensions of each emplacement hole within the hydrodynamic measurement zones;

(i) a description of materials, including their densities, to be used to stem the emplacement hole within each hydrodynamic measurement zone; and

(j) the location and configuration of any known voids larger in volume than one cubic meter within each hydrodynamic measurement zone.

7. In the event of receipt by the Party carrying out the explosion of notification from the Verifying Party of its intent to carry out on-site inspection, the Party carrying out the explosion shall provide the Verifying Party, not less than 60 days prior to the planned date of the beginning of emplacement of explosives, with the following information:

(a) the number of explosives; the planned yield of each explosive; the planned depth of emplacement of each explosive with an accuracy of 10 meters; the planned point of emplacement of each explosive to be used in a group explosion relative to all other explosives in the group with an accuracy of 10 percent of the distance between that explosive and the nearest other explosive, but in no case shall the error be greater than 100 meters; and the planned time intervals between individual explosions in each group explosion with an accuracy of 0.1 second;

(b) a description of the geological and geophysical characteristics of the site of each explosion that could influence determination of the yield, which shall include: the depth of the water table; a lithologic column above each emplacement point; the position of each emplacement point relative to nearby geological and other features that influenced the design of the project of which the explosion is a part; and the estimated physical parameters of the rock within each hydrodynamic measurement zone, including bulk density, grain density, porosity, and total water content;

(c) the locations and purposes of facilities and installations that are associated with the conduct of the explosion;

(d) the planned date of the beginning of emplacement of each explosive;

(e) a topographic chart, marked with geographic coordinates accurate to one minute of latitude and longitude, of the areas circumscribed by circles of 15 kilometer radius centered on points on the surface of the earth above the points of emplacement of each explosive, at a scale of 1:24,000 or 1:25,000 with a contour interval of 10 meters or less. The planned location of each explosive shall be marked on this chart with an accuracy of 50 meters;

(f) the planned cross-sectional dimensions of each emplacement hole within the hydrodynamic measurement zones; and

(g) the location and configuration of any known voids larger in volume than one cubic meter within each hydrodynamic measurement zone.

8. For each explosion, the Party carrying out the explosion shall inform the Verifying Party, no less than two days prior to the explosion, of the planned time of detonation of each explosive, with an accuracy of 0.1 second. In the event the Party carrying out the explosion decides to change the detonation time, the Verifying Party shall be notified of this change immediately after this decision has been taken. No more than 10 days following the explosion the Verifying Party shall be informed of the actual detonation time.

9. The Party carrying out the explosion shall immediately notify the Verifying Party of any change in any information provided in accordance with paragraph 3, 6, or 7 of this Section. If the Verifying Party has provided notification under paragraph 4 of this Section of its decision to use the hydrodynamic yield measurement method or to carry out on-site inspection, the emplacement of explosives shall not begin less than 90 days following notification of any change in any information provided in accordance with paragraph 3, 6, or 7 of this Section that requires more extensive verification procedures than are required on the basis of initial information, unless an earlier date for the beginning of emplacement of explosives has been agreed upon by the Parties. Such changes include:

(a) change in the location of the explosion by more than one minute of latitude or longitude;

(b) change in the number of explosives in a group explosion;

(c) change in the yield of the explosion;

(d) change in the purpose of the explosion; and

(e) delay in the planned date of the explosion by more than 90 days.

10. In using an explosion to decrease the consequences of an emergency situation related to an unforeseen set of circumstances and requiring immediate action, by virtue of which it would be practically impossible to adhere to the requirements of paragraph 3 of this Section concerning the time period, the following conditions shall be fulfilled:

(a) the Party making the decision to carry out an explosion for such a purpose shall notify the Verifying Party of this decision immediately after it has been made and shall describe the circumstances and provide the planned yield for such an explosion;

(b) the planned aggregate yield for such an explosion shall not exceed 100 kilotons and the explosion shall not include more than three individual explosions, unless the Parties otherwise agree;

(c) the Party carrying out such an explosion shall provide the Verifying Party with the information specified in paragraphs 3 and 6 of this Section, to the extent such information is available, after making the decision on carrying out the explosion, but no less than 60 days prior to the beginning of emplacement of explosives; and

(d) if, within 15 days following receipt of notification of such an explosion, the Verifying Party has made the decision to carry out verification of that explosion using the hydrodynamic yield measurement method, it shall deliver hydrodynamic yield measurement equipment to the point of entry in the territory of the Party carrying out the explosion no less than 35 days prior to the planned date of the beginning of emplacement of explosives, in accordance with paragraphs 8(b), 8(c), 8(d), 8(e), and 8(f) of Section VIII of this Protocol. This equipment shall be handed over, in the same condition as that in which it was received, to Designated Personnel at the site of the explosion for emplacement, installation, and use no less than 20 days prior to the planned date of the beginning of emplacement of explosives.

11. The Party carrying out an explosion shall have the right to make changes in the schedule of operations related to the conduct of the explosion. In the event the Verifying Party exercises its rights to use the hydrodynamic yield measurement method or to carry out on-site inspection, in accordance with Section III of this Protocol, the Party carrying out the explosion shall immediately inform the Verifying Party of any such change in the schedule of operations. In the event the Verifying Party has provided notification, under paragraph 4 of this Section, of its decision to use the hydrodynamic yield measurement method or to carry out on-site inspection, the explosion shall not be carried out more than five days prior to the planned date of the explosion indicated in the initial notification, unless the Parties otherwise agree.

12. The Verifying Party may at any time, but no more than one year after the explosion, request from the Party carrying out the explosion clarification of any point of information provided in accordance with this Section. Such clarification shall be provided in the shortest possible time, but no more than 30 days following receipt of a request.

SECTION V. HYDRODYNAMIC YIELD MEASUREMENT METHOD

1. The hydrodynamic measurement zone for each explosive means a cylindrical region coaxial with the emplacement hole of that explosive. This region extends in the direction of the entrance to the emplacement hole from the midpoint of the canister containing that explosive to the point at which the axis of the emplacement hole intersects a spherical surface whose radius, measured from

the midpoint of the canister containing the explosive, is equal in meters to 10 times the cube root of the planned yield in kilotons of that explosive, or 25 meters, whichever is greater. The length of this region in the opposite direction from the same midpoint of the canister is equal in meters to three times the cube root of the planned yield in kilotons of that explosive, or 7.5 meters, whichever is greater. The radius of this region is equal in meters to three times the cube root of the planned yield in kilotons of that explosive, or 7.5 meters, whichever is greater.

2. For hydrodynamic yield measurement the following procedures shall apply:

(a) Designated Personnel shall emplace, for each explosive, the equipment specified in paragraph 5(a) of Section VIII of this Protocol in the same emplacement hole as the explosive. The equipment specified in paragraphs 5(a) and 5(b) of Section VIII of this Protocol shall be installed, in accordance with installation instructions provided in accordance with paragraph 8(a)(i) of Section VIII of this Protocol, by Designated Personnel under observation of personnel of the Party carrying out the explosion and with their assistance, if Designated Personnel have requested such assistance. The location of each recording facility and the command and monitoring facility of the Verifying Party shall be determined by agreement of the Parties with respect to each particular explosion. This equipment shall be operated by Designated Personnel;

(b) for each explosive, the equipment specified in paragraph 5(a) of Section VIII of this Protocol shall be installed so that the end point of the equipment farthest from the emplacement hole entrance is three meters from the surface of the explosive canister closest to the emplacement hole entrance as measured along the axis of the emplacement hole. The location of this equipment relative to the axis of the emplacement hole shall be agreed upon by the Parties. No more than six sensor channels shall be installed for each explosive. Each Party shall make documented records of measured distances to the sensors. These records shall be exchanged by the Parties;

(c) explosive canisters with a length greater than 10 meters or a diameter greater than three meters shall be used only if prior agreement has been reached between the Parties establishing, in each specific case, provisions for their use; and

(d) the Party carrying out the explosion shall fill all voids other than the explosive canister within the hydrodynamic measurement zone of each explosive in each emplacement hole with stemming material. This stemming material, beginning no more than three meters from each explosive canister cover towards the entrance of the hole, and proceeding in that direction, shall have a bulk density no less than 70 percent of the average density of the surrounding rock. An alternate stemming material may be used for filling the remainder of the hydrodynamic measurement zone of that explosive. For any explosive emplaced in an emplacement hole whose diameter is less than 30 centimeters and emplaced at a distance of more than 1.5 kilometers from the entrance of the hole, an alternate stemming material may be used for filling the entire hydrodynamic measurement zone of that explosive. If more than one explosive is emplaced in a single emplacement hole, the Parties shall agree upon an alternate stemming material for filling the entire hydrodynamic measurement zone of each explosive other than the explosive nearest the entrance of the emplacement hole if the emplacement hole diameter is greater than 30 centimeters but less than 60 centimeters. Any alternate stemming material shall have a bulk density no less than 1.2 grams per cubic centimeter. Pipes located within the hydrodynamic measurement zone need not be filled with stemming material if they have a cross-sectional area less than 10 square centimeters, or if they have a cross-sectional area less than 100 square centimeters and a length less than one meter. Costs incurred by the Party carrying out the explosion to ensure, within the hydrodynamic measurement zone, a density of stemming material no less than 70 percent of the average density of the surrounding rock shall be borne by the Verifying Party.

3. For a group explosion the Party carrying out the explosion shall ensure that the emplacement point of each explosive canister, the detonation sequence, and the time intervals between individual explosions are such that no explosion in the group shall interfere with the hydrodynamic yield measurement of any other individual explosion. With the exception of group explosions provided for in paragraph 2 of Section II of this Protocol, if the technological characteristics of the project of which the group explosion is a part make it impossible to satisfy this requirement, the Parties, prior to the beginning of emplacement of explosives, shall agree upon alternative hydrodynamic or other verification procedures.

4. In preparation for the use of the hydrodynamic yield measurement method, the Verifying Party shall have the right to confirm the validity of the geological and geophysical information provided in accordance with Section IV of this Protocol, in accordance with the following procedures:

(a) Designated Personnel may analyze relevant studies and measurement data, including logging data, of the Party carrying out the explosion, the core samples or rock fragments extracted from each emplacement hole within the hydrodynamic measurement zone, as well as any logging data and core samples from existing exploratory holes, which shall be provided to Designated Personnel upon their arrival at the explosion site, if the Party carrying out the explosion carried out relevant studies, measurements, and coring; and

(b) Designated Personnel shall have the right to observe logging and the extraction of core samples or rock fragments from locations agreed upon by the Parties within the hydrodynamic measurement zone in the emplacement hole or from an exploratory hole at depth intervals agreed upon by the Parties. Any such exploratory hole shall be no farther from the emplacement hole than a distance in meters of 10 times the cube root of the planned yield in kilotons of the emplaced explosive; or

(c) if the Party carrying out the explosion does not take core samples or rock fragments in accordance with subparagraph (b) of this paragraph or does not drill an exploratory hole meeting the requirements specified in subparagraph (b) of this paragraph, the Verifying Party shall have the right to extract sidewall rock samples from the emplacement hole with its own equipment, to drill such an exploratory hole, and to core this hole. Such operations shall be conducted in the presence of personnel of the Party carrying out the explosion. Such an exploratory hole shall be stemmed by the Party carrying out the explosion, at the expense of the Verifying Party; and

(d) Designated Personnel shall have the right to examine and remove from the territory of the Party carrying out the explosion logging data, core samples, sidewall rock samples, and rock fragments referred to in subparagraphs (a), (b), and (c) of this paragraph, as selected by Designated Personnel.

5. While using the hydrodynamic yield measurement method, Designated Personnel shall have the right:

(a) to confirm by direct measurement the validity of the information provided in accordance with paragraphs 6(f), 6(g), and 6(h) of Section IV of this Protocol;

(b) to confirm the validity of the information provided in accordance with paragraph 6(i) of Section IV of this Protocol, and to receive, upon request, a sample of each batch of stemming material as this material is placed in the emplacement hole within the hydrodynamic measurement zone; and

(c) to confirm the validity of the information provided in accordance with paragraphs 6(b) and 6(j) of Section IV of this Protocol, by observing, upon request, relevant field measurements being made by the Party carrying out the explosion if such measurements are made by the Party carrying out the explosion, and by making field measurements with its own logging equipment, to include determination of the location and configuration of any voids within each hydrodynamic measurement zone or, at the option of the Verifying Party under leasing conditions, with the logging equipment of the Party carrying out the explosion, if the Party carrying out the explosion has such equipment. Such field measurements shall be made in the presence of personnel of both Parties. All of the data produced by either Party, including calibration data, shall be duplicated, and one copy of the data shall be provided to each Party. Calibration data for the equipment shall include information to confirm the sensitivity of the equipment under the conditions in which it is utilized for this explosion.

6. Designated Personnel shall have the right:

(a) to have access to the site of the explosion and to facilities and structures related to the conduct of the explosion, along agreed routes;

(b) to observe the emplacement of each explosive canister, to confirm, by direct measurement, the depth of emplacement of each explosive canister and, for explosives in a group, the relative location of their points of emplacement, and to observe the stemming of each emplacement hole;

(c) to have access to their equipment associated with the use of the hydrodynamic yield measurement method from commencement of its use by Designated Personnel at the explosion site until the departure of all personnel from the explosion area prior to the explosion;

(d) to unimpeded visual observation of the entrance area to each emplacement hole at any time from the moment of emplacement of each explosive until the departure of all personnel from the explosion area prior to the explosion;

(e) to observe remotely by means of closed-circuit television equipment their hydrodynamic yield measurement equipment specified in paragraphs 5(b) and 5(c) of Section VIII of this Protocol;

(f) to observe the explosion; and

(g) to monitor electrically the integrity and performance of their equipment in each recording facility from the command and monitoring facility, to transmit the hydrodynamic yield measurement data from each recording facility to the command and monitoring facility, and to transmit the commands required for operation of each recording facility from the command and monitoring facility to each recording facility.

7. The Party carrying out the explosion shall produce, at the request of the Verifying Party, a timing reference command signal to each recording facility at two minutes, plus or minus 100 milliseconds, before the moment of the explosion, or before the first explosion in a group, and a zero-time reference signal to each corresponding recording facility for each explosion, with an accuracy of plus or minus one microsecond. The parameters for these signals, produced by the Party carrying out the explosion, and procedures for their transmission and reception shall be agreed upon by the Parties. At the Verifying Party's option, it shall have the right to generate a timing reference signal for each explosion, using the electromagnetic pulse from its hydrodynamic measurement cables. These timing reference signals shall be transmitted, used, and recorded by the Verifying Party without intervention by the Party carrying out the explosion.

8. Designated Personnel shall have the right to acquire photographs taken by the Party carrying out the explosion, with photographic cameras provided by the Verifying Party, under the following conditions:

(a) the Party carrying out the explosion shall identify those of its personnel who will take photographs;

(b) photographs shall be taken as requested by, and in the presence of, Designated Personnel. If requested by Designated Personnel, such photographs shall show the size of an object by placing a measuring scale, provided by the Verifying Party, alongside that object during the photographing;

(c) Designated Personnel shall determine whether photographs conform to those requested and, if not, repeat photographs shall be taken; and

(d) before completion of any photographed operation related to emplacement, and prior to the time at which an object being photographed becomes permanently hidden from view, Designated Personnel shall determine whether requested photographs are adequate. If they are not adequate, before the operation shall proceed, additional photographs shall be taken until the Designated Personnel determine that the photographs of that operation are adequate. This photographic process shall be carried out as expeditiously as possible, and in no case shall the cumulative delay resulting from this process exceed two hours for each emplacement operation, unless the Parties otherwise agree.

9. Designated Personnel shall have the right to obtain photographs of the following:

(a) the exterior of installations and structures associated with the conduct of the explosion;

(b) the emplacement of each explosive canister and stemming of each emplacement hole as specified in paragraph 6(b) of this Section;

(c) geological samples used for confirming the validity of geological and geophysical information as provided for in paragraph 4 of this Section, and equipment used in obtaining such samples;

(d) emplacement and installation of hydrodynamic yield measurement method equipment and cables associated with it;

(e) containers, facilities and structures for storing and operating the equipment used by Designated Personnel; and

(f) with the agreement of the Party carrying out the explosion, other activities of Designated Personnel directly related to the use of the hydrodynamic yield measurement method.

10. Equipment identified by the Party carrying out the explosion, in accordance with paragraph 8(h) of Section VIII of this Protocol, as unacceptable for use at the time of the

explosion shall be sealed by both Parties and placed in the custody of the Party carrying out the explosion at a time agreed upon by the Party carrying out the explosion and by Designated Personnel.

11. Two individuals from the Party carrying out the explosion shall have the right to join Designated Personnel in the command and monitoring facility at the time of the explosion, to observe command and monitoring of the recording equipment and acquisition and duplication of data transmitted from each recording facility, and to receive a copy of the data. Designated Personnel, in the presence of personnel of the Party carrying out the explosion, shall recover all recordings of data taken at the time of the explosion and prepare two identical copies of such data. Personnel of the Party carrying out the explosion shall select one of the two identical copies by lot, and Designated Personnel shall retain the other copy. Designated Personnel shall retain no other such data, and shall have no further access to their recording facilities, their command and monitoring facility, and their equipment until these are returned to the Verifying Party, in accordance with paragraph 11 of Section VIII of this Protocol, unless the Parties otherwise agree, in which case access of the Designated Personnel to their recording facilities, their command and monitoring facility, and their equipment shall be under the observation of personnel of the Party carrying out the explosion. Designated Personnel shall provide the Party carrying out the explosion with information on sensor location in relation to the explosive canister. With respect to digital recording of signals, the Verifying Party shall provide a description of the recording format and a sample of the computer program for reading digital data. The program shall be provided by Designated Personnel upon their arrival at the point of entry.

12. Designated Personnel shall not be present in areas from which all personnel of the Party carrying out the explosion have been withdrawn in connection with carrying out an explosion, but shall have the right to reenter those areas at the same time as personnel of the Party carrying out the explosion.

SECTION VI. LOCAL SEISMIC NETWORK

1. For any group explosion that the Party carrying out the explosion has notified to have a planned aggregate yield exceeding 150 kilotons, and with respect to which the Verifying Party has notified its intention to measure the yield of the explosion using the hydrodynamic yield

measurement method, Designated Personnel, in addition to using the hydrodynamic yield measurement method, shall have the right to install and use, under the observation and with the assistance of personnel of the Party carrying out the explosion if Designated Personnel request such assistance, a local seismic network.

2. Such a network shall be installed and used at locations agreed upon by the Parties within an area circumscribed by circles of 15 kilometer radius centered on points on the surface of the earth above the points of emplacement of the explosives. The number of stations of the network shall be determined by the Verifying Party, but shall not exceed the number of explosives in the group plus eight.

3. The control point of the local seismic network shall be installed at a location that the Parties agree is outside the areas specified in paragraph 12 of Section V of this Protocol and within the area specified in paragraph 2 of this Section, unless the Parties otherwise agree. Designated Personnel shall have the right to have access to their equipment in the control point at any time from commencement of installation of the local seismic network until five days following the explosion, subject to the provisions of paragraph 12 of Section V, if applicable, and paragraph 10(e) of Section VIII of this Protocol.

4. Installation of a local seismic network may commence 20 days prior to the planned date of the explosion, and its operation shall continue no more than three days following the explosion, unless the Parties otherwise agree.

5. Designated Personnel shall have the right to use radio communication for the transmission and reception of data and control signals between seismic stations and the control point of the local seismic network. Frequencies and maximum power output of radio transmitters, frequency range and sensitivity of radio receivers, orientation of transmitting and receiving antennas, and period of operation of the local seismic network radio transmitters and radio receivers prior to the explosion shall be agreed upon by the Parties. Operation of the radio equipment following the explosion shall continue for no more than three days, unless the Parties otherwise agree.

6. Designated Personnel shall have access along agreed routes to the stations and the control point of the local seismic network for the purpose of carrying out activities related to the installation and use of the local seismic network.

7. In installing and using a local seismic network, Designated Personnel shall have the right to use and retain the topographic chart provided in accordance with paragraph 6(e) of Section IV of this Protocol.

8. Designated Personnel shall have the right to obtain photographs associated with the local seismic network, which shall be taken by the Party carrying out the explosion at the request of Designated Personnel in accordance with applicable provisions of paragraph 8 of Section V of this Protocol.

9. Within five days following the explosion, Designated Personnel shall provide the Party carrying out the explosion with the original and one copy of the data from the local seismic network stations recorded on the primary medium, graphic representation of recording materials on a paper medium, and the results of calibration of seismic channels. Upon receipt of these materials the Party carrying out the explosion, in the presence of Designated Personnel, shall select and retain either the copy or the original of each recording, graphic representation, and results of calibration of the seismic channels. The set of data not selected by the Party carrying out the explosion shall be retained by Designated Personnel. For digital recording of seismic signals, the Verifying Party shall provide the description of the recording format and a sample of the computer program for reading digital data. Designated Personnel shall provide the program sample upon arrival at the point of entry. Seismic recordings provided to the Party carrying out the explosion shall cover a time period beginning no less than 30 seconds prior to the time of arrival of the first explosion-generated P-wave at any station of the local seismic network and ending no more than three days after the explosion, unless the Parties otherwise agree. All seismic recordings shall include a common time reference agreed upon by the Parties.

SECTION VII. ON-SITE INSPECTION

1. In carrying out on-site inspection, the Verifying Party shall have the right to confirm the validity of the geological and geophysical information provided in accordance with paragraphs 3 and 7 of Section IV of this Protocol in accordance with the following procedures:

(a) Designated Personnel may analyze relevant studies and measurement data, including logging data, of the Party carrying out the explosion, the core samples or rock fragments extracted from each emplacement hole from the bottom of the hole to a distance above the point of emplacement in meters equal to 40 times the cube root of the planned yield in kilotons of the emplaced explosive, as well as any logging data and core samples from existing exploratory holes, which shall be provided to Designated Personnel upon their arrival at the explosion site, if the Party carrying out the explosion carried out relevant studies, measurements, and coring;

(b) Designated Personnel shall have the right to observe logging and the extraction of core samples or rock fragments from locations agreed upon by the Parties within the portion of the emplacement hole specified in subparagraph (a) of this paragraph or from an exploratory hole, provided that it is located no farther from the emplacement hole than a distance in meters equal to 10 times the cube root of the planned yield in kilotons of the emplaced explosive at depth intervals agreed upon by the Parties if such operations are carried out by the Party carrying out the explosion;

(c) Designated Personnel shall have the right to use their own equipment for logging the emplacement hole and extracting sidewall rock samples within the portion of the emplacement hole identified in subparagraph (a) of this paragraph. Such operations shall be conducted in the presence of personnel of the Party carrying out the explosion; and

(d) all logging data produced by either Party, including calibration data, shall be duplicated, and one copy of the data shall be provided to each Party. Calibration data shall include information needed to confirm the sensitivity of the equipment under the conditions in which it is used. Designated Personnel shall have the right to examine and remove from the territory of the Party carrying out the explosion core samples, sidewall rock samples, and rock fragments specified in subparagraphs (a), (b), and (c) of this paragraph, as selected by Designated Personnel.

2. In carrying out on-site inspection, Designated Personnel shall have the right:

(a) to confirm by direct measurement the validity of the information provided in accordance with paragraph 7(f) of Section IV of this Protocol;

(b) to confirm the validity of the information provided in accordance with paragraph 7(g) of Section

92

IV of this Protocol, by observing relevant measurements being made, and by having access to the data obtained if such measurements are conducted by the Party carrying out the explosion, and by making measurements with their own equipment to determine the location and configuration of any voids within each hydrodynamic measurement zone;

(c) to have access to the site of the explosion and to facilities and structures related to the conduct of the explosion, along agreed routes;

(d) to observe the emplacement of each explosive canister, to confirm the depth of its emplacement and the relative location of explosives in a group, and to observe the stemming of each emplacement hole;

(e) to have access to their equipment associated with carrying out on-site inspection from commencement of its use by Designated Personnel at the explosion site until the departure of all personnel from the explosion area prior to the explosion;

(f) to unimpeded visual observation of the entrance area to each emplacement hole at any time from the moment of emplacement of each explosive until the departure of all personnel from the explosion area prior to the explosion; and

(g) to observe the explosion.

3. Designated Personnel shall have the right to obtain photographs associated with carrying out on-site inspection, which shall be taken by the Party carrying out the explosion at the request of Designated Personnel, in accordance with paragraphs 8 and 9 of Section V of this Protocol.

SECTION VIII. EQUIPMENT

1. Designated Personnel, in carrying out activities related to verification in accordance with this Protocol, shall have the right to bring into the territory of the Party carrying out the explosion, install, and use the following equipment:

(a) if the Verifying Party has provided notification of its intent to use the hydrodynamic yield measurement method, part or all of the equipment specified in paragraph 5 of this Section;

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(b) if the Verifying Party has provided notification of its intent to use a local seismic network, part or all of the equipment specified in paragraph 6 of this Section;

(c) if the Verifying Party has provided notification of its intent to carry out on-site inspection, part or all of the equipment specified in paragraph 7 of this Section;

(d) geologist's field tools and kits, geodetic equipment, topographic survey equipment, equipment for recording of field data, and equipment for rapid photo processing;

(e) portable short-range communication equipment, whose power and frequency shall conform to restrictions established by the Party carrying out the explosion;

(f) mobile work stations and temporary facilities;

(g) medical and health physics equipment and supplies, personal protective gear, personal computers, recreational and other items as may be agreed by the Parties; and

(h) satellite communications equipment, if the Party carrying out the explosion does not provide satellite communications for Designated Personnel.

2. At the choice of the Party carrying out the explosion, closed-circuit television equipment shall be provided by the Verifying Party or the Party carrying out the explosion, for the purpose of remote observation by the Verifying Party, in accordance with paragraph 6(e) of Section V of this Protocol.

3. Designated Personnel, in carrying out activities related to verification in accordance with this Protocol, shall have the right to bring into the territory of the Party carrying out the explosion, for use by the personnel of the Party carrying out the explosion in accordance with paragraph 8 of Section V of this Protocol, photographic cameras, film, and related photographic equipment.

4. No less than 120 days prior to the planned date of the beginning of emplacement of explosives, the Parties shall agree upon the list of such additional equipment as may be requested by the Verifying Party, and which shall be supplied by the Party carrying out the explosion for use by Designated Personnel. Such additional equipment

with its description and operating instructions shall be provided to Designated Personnel upon arrival at the site of the explosion.

5. The complete list of equipment for hydrodynamic yield measurement shall include:

(a) sensing elements and associated cables for use in the emplacement hole;

(b) the recording facility or facilities, including equipment for sending and recording commands, equipment for generation of a timing reference signal from hydrodynamic measurement cables, and equipment for data acquisition, recording and processing, and, with respect to a group explosion in which any individual explosion in the group is separated from any other explosion by more than two kilometers, radio equipment for monitoring the operational status of the equipment and for transmitting and receiving control signals. Frequencies and maximum power output of radio transmitters, frequency range and sensitivity of radio receivers, and orientation of transmitting and receiving antennas shall be agreed upon by the Parties. Operation of the radio equipment shall begin at the time of the beginning of emplacement of sensing elements and associated cables and shall end at the time of the explosion. Designated Personnel shall notify the Party carrying out the explosion in advance of any activation or deactivation of the radio equipment;

(c) cables for above-ground transmission of electrical power, control signals and data;

(d) electrical power supplies;

(e) measuring and calibration instruments, support equipment, maintenance equipment, and spare parts necessary for ensuring the functioning of sensing elements, cables and equipment of the recording facilities and the command and monitoring facility;

(f) logging and sidewall rock sampling equipment necessary for confirming geological and geophysical characteristics of the emplacement hole as well as for obtaining data on the spatial location of points of emplacement of each explosive canister;

(g) coring equipment and drilling equipment for the drilling of an exploratory hole for coring

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purposes. Upon agreement between the Parties, the Verifying Party, under leasing conditions, may use for these purposes the coring and drilling equipment of the Party carrying out the explosion; and

(h) the command and monitoring facility, with equipment, including computers, for generating and recording command and monitoring signals, for transmitting and receiving command and monitoring signals between each recording facility and the command and monitoring facility, as well as for retrieving, storing, and processing hydrodynamic data.

6. The complete list of equipment for a local seismic network shall include:

(a) seismic stations, each of which contains seismic instruments, an electrical power supply and associated cables, and radio equipment for receiving and transmitting control signals and data;

(b) equipment for the control point, including electrical power supplies, equipment for sending and recording control signals and data, and data processing equipment; and

(c) measuring and calibration instruments, support equipment, maintenance equipment, and spare parts necessary for ensuring the functioning of the complete network.

7. The complete list of equipment for on-site inspection shall include logging and sidewall rock sampling equipment necessary for confirming geological and geophysical characteristics of the emplacement hole as well as for obtaining data on the spatial location of points of emplacement of each explosive canister.

8. The following procedures shall be followed with respect to the equipment for hydrodynamic yield measurement, the equipment for on-site inspection, and the equipment for a local seismic network:

(a) no less than 140 days prior to the planned date of the beginning of emplacement of explosives, the Verifying Party, if it has declared its intention to use the hydrodynamic yield measurement method, shall provide the Party carrying out the explosion with the equipment and information specified in subparagraph (a)(i) of this paragraph and, if the Verifying Party has declared its intention to use a local seismic network, the equipment and information specified in subparagraph (a)(ii) of this paragraph; or, if it has declared its intention to conduct on-site inspection, equipment and information specified in subparagraph (a)(iii) of this paragraph, in order to enable the Party carrying out the explosion to familiarize itself with such equipment, if such equipment and information have not previously been provided. If, upon completion of familiarization with the equipment provided in accordance with this subparagraph, the Party carrying out the explosion concludes that use of any element of the equipment provided would be inconsistent with its containment or security requirements, the Party carrying out the explosion shall promptly, but no less than 120 days prior to the planned date of the beginning of emplacement of explosives, so inform the Verifying Party, and shall specify the modifications that must be made in this equipment to satisfy the requirements of the Party carrying out the explosion. The equipment provided in accordance with this subparagraph shall be returned in the same condition as that in which it was received to the Verifying Party at the point of entry no less than 90 days prior to the planned date of the beginning of emplacement of explosives. The following equipment and information shall be provided:

(i) one set of equipment specified in paragraphs 5(a), 5(b), 5(c), 5(d), 5(e), 5(f) and 5(h) of this Section, as well as electrical and mechanical design information, specifications, and installation and operating instructions for this equipment;

(ii) one set of equipment specified in paragraph 6 of this Section, including one seismic station, as well as electrical and mechanical design information, specifications, and installation and operating instructions for this equipment; and

(iii) one set of equipment specified in paragraph 7 of this Section, as well as electrical and mechanical design information, specifications, and operating instructions for this equipment;

(b) no less than 50 days prior to the planned date of the beginning of emplacement of explosives, the Verifying Party shall deliver in sealed containers, to the point of entry in the territory of the Party carrying out the explosion, two identical sets of each type of equipment that it intends to use

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for activities related to verification for that explosion, with a complete inventory of equipment, specifying any components that do not perform functions directly related to measurements during the explosion. These sets of equipment shall have the same components and technical characteristics as the equipment specified in subparagraph (a) of this paragraph, or, if specified by the Party carrying out the explosion in accordance with subparagraph (a) of this paragraph, shall contain modifications made in accordance with the requirements of the Party carrying out the explosion with regard to containment and security. Each of the two identical sets shall include the following:

(i) if the Verifying Party has provided notification of its intent to use the hydrodynamic yield measurement method, equipment specified in paragraphs 5(a), 5(b), and 5(h) of this Section; and

(ii) if the Verifying Party has provided notification of its intent to use a local seismic network, equipment specified in paragraphs 6(a) and 6(b) of this Section;

(c) the Party carrying out the explosion shall choose one of the two identical sets of each type of equipment for use by Designated Personnel;

(d) at the point of entry the Party carrying out the explosion shall affix its own seals to the sealed containers in which the equipment chosen for use arrived, shall ensure protection of this equipment throughout the entire period it is in the territory of the Party carrying out the explosion, and shall transport that equipment to the site of the explosion. Prior to shipment to the site of the explosion, the set of equipment chosen for use shall be kept sealed at the point of entry, and the time of its shipment to the site of the explosion shall be determined by the Party carrying out the explosion. The Party carrying out the explosion shall consult with Designated Personnel regarding plans and schedule of shipment of the equipment no less than 48 hours in advance of the shipment. Designated Personnel shall have the right to unimpeded verification of the integrity of their seals, to observe their equipment, and to accompany their equipment. This equipment shall be handed over to Designated Personnel at the site of the explosion for emplacement, installation, and use no less than 20 days prior to the planned date of the beginning of emplacement of explosives, and it shall thereafter remain under the control of Designated Personnel; seals affixed to the equipment specified in paragraph 5(a) of this Section shall not be removed prior to preparation for installation of such equipment, at which time the seals shall be removed by Designated Personnel in the presence of personnel of the Party carrying out the explosion, and personnel of the Party carrying out the explosion thereafter shall have the right to observe all activities relating to the installation of such equipment;

(e) seals of the Verifying Party shall be removed from equipment not chosen for use, in the presence of personnel of both Parties, and thereafter this equipment shall be retained for inspection by the Party carrying out the explosion without the presence of Designated Personnel for a period ending no more than 30 days following the explosion, at which time such equipment shall be returned in the same condition as that in which it was received to the Verifying Party at the point of entry;

(f) no less than 50 days prior to the planned date of the beginning of emplacement of explosives, the Verifying Party shall provide, at its option, either one or two sets of the equipment that the Verifying Party intends to use for activities related to verification for this explosion, other than equipment specified in paragraph 8(b) of this Section. A complete inventory of such equipment, specifying any components that do not perform functions directly related to measurements during the explosion, shall be provided to the Party carrying out the explosion at least one week prior to the planned arrival of the equipment at the point of entry. If only one set of equipment is provided by the Verifying Party, the Party carrying out the explosion shall have the right to inspect this equipment upon its arrival at the point of entry for up to 30 days, without the presence of Designated Personnel. Upon conclusion of the inspection, the Party carrying out the explosion shall identify any equipment that it deems unacceptable for delivery to the site of the explosion, in which case such equipment shall be removed by the Verifying Party and returned to its territory. All equipment deemed acceptable for delivery to the site of the explosion shall be shipped to the site of the explosion so as to enable Designated Personnel to carry out their activities related to verification as set forth in the coordinated schedule specified in paragraph 6 of Section XI of this Protocol, but in no case less than

20 days prior to the beginning of emplacement of explosives. The Party carrying out the explosion shall transport this equipment in such a manner as to ensure that it is delivered to Designated Personnel in the same condition as that in which it was received. If two sets of equipment are provided by the Verifying Party, the procedures specified in paragraphs 8(b), 8(c), 8(d), and 8(e) of this Section for selection and inspection of equipment shall be followed. If the Verifying Party under leasing conditions uses coring and drilling equipment of the Party carrying out the explosion, such equipment shall be provided to Designated Personnel at the site of the explosion so as to enable Designated Personnel to carry out their activities related to verification as set forth in the coordinated schedule referred to in paragraph 6 of Section XI of this Protocol, but in no case less than 20 days prior to the beginning of emplacement of explosives, unless the Parties otherwise agree;

(g) with respect to the equipment specified in paragraphs 5(a) and 5(c) of this Section, the Party carrying out the explosion shall have the right to retain for its own purposes up to 150 meters of each type of cable in the set being inspected. The cable segments to be retained may be taken from any place along the length of the cable, but the number of individual segments shall not exceed the number of reels of cable in a set of equipment; and

(h) after inspecting the equipment in accordance with paragraphs 8(e) and 8(f) of this Section, the Party carrying out the explosion shall inform Designated Personnel what equipment of that delivered to the site of the explosion it deems unacceptable for use during the explosion.

9. Prior to the beginning of emplacement of explosives, Designated Personnel shall certify in writing to the personnel of the Party carrying out the explosion that the equipment delivered to the site of the explosion is in working condition.

10. Personnel of the Party carrying out the explosion shall have the right to observe use of equipment by Designated Personnel at the site of the explosion, with access to the recording facilities, the command and monitoring facility, the control point, and seismic stations of the local seismic network of the Verifying Party being subject to the following:

(a) at any time prior to the explosion that Designated Personnel are not present in the recording facilities, in the command and monitoring facility, in the control point, or at the seismic stations, these facilities, control point, and stations shall be sealed by the seals of both Parties. Seals may be removed by Designated Personnel only in the presence of personnel of the Party carrying out the explosion;

(b) prior to the explosion, personnel of the Party carrying out the explosion may enter the recording facilities, the command and monitoring facility, or the control point of the Verifying Party for the purpose of conducting operations that require the participation of both Parties only with the agreement of the Designated Personnel Team Leader and when accompanied by the Designated Personnel Team Leader or his designated representative;

(c) at all other times prior to the explosion, personnel of the Party carrying out the explosion may enter the recording facilities, the command and monitoring facility, or the control point of the Verifying Party only at the express invitation of the Designated Personnel Team Leader and when accompanied by the Designated Personnel Team Leader or his designated representative;

(d) following the explosion, Designated Personnel shall have the right to enter the recording facilities for data recovery only when accompanied by personnel of the Party carrying out the explosion. No later than the final dry run, Designated Personnel shall inform the Party carrying out the explosion of procedures for recovering such data and shall advise the Party carrying out the explosion at the time of data recovery of any changes the Designated Personnel make in those procedures and the reasons for such changes. Personnel of the Party carrying out the explosion shall observe the process of data recovery from instrumentation in the recording facilities and the command and monitoring facility, and shall leave the recording facilities and the command and monitoring facility at the same time as Designated Personnel; and

(e) at any time following the explosion, personnel of the Party carrying out the explosion shall have the right to observe the activities of Designated Personnel in the control point. Personnel of the Party carrying out the explosion shall be present in the control point to observe recovery of the initial data, which shall take place within one hour following the explosion. At any time following the explosion that Designated Personnel are not present in the control point, the control point shall be sealed with the seals of both Parties. The seals may be removed by Designated Personnel only in the presence of personnel of the Party carrying out the explosion. Within five days following the explosion, Designated Personnel shall leave the control point at the same time as personnel of the Party carrying out the explosion.

11. Following data recovery, the equipment used for activities related to verification in accordance with this Protocol may be retained by the Party carrying out the explosion and be subject to its exclusive control for a period ending no more than 30 days following data recovery, at which time this equipment shall be returned, in the same condition as that in which it was received, to the Verifying Party at the point of entry. Elimination of information stored in memories shall not be deemed damage to the equipment.

SECTION IX. DESIGNATED PERSONNEL AND TRANSPORT PERSONNEL

1. No later than 10 days following entry into force of the Treaty, each Party shall provide the other Party with a list of its proposed Designated Personnel who will carry out the activities related to verification in accordance with this Protocol and a list of its proposed Transport Personnel who will provide transportation for these Designated Personnel, their baggage, and equipment of the Verifying Party. These lists shall contain name, date of birth, and sex of each individual of its proposed Designated Personnel and Transport Personnel. The list of Designated Personnel shall at no time include more than 200 individuals, and the list of Transport Personnel shall at no time include more than 200 individuals.

2. Each Party shall review the list of Designated Personnel and the list of Transport Personnel proposed by the other Party. If the Party reviewing a list determines that an individual included thereon is acceptable to it, it shall so inform the Party providing the list within 20 days following receipt of the list, and such an individual shall be deemed accepted. If the Party reviewing a list determines that an individual included thereon is not acceptable to it, it shall so inform the Party providing the list of its objection within 20 days following receipt of the list, and such an individual shall be deemed not accepted and shall be deleted from the list.

3. Each Party may propose the addition or substitution of individuals on its list of Designated Personnel or its list of Transport Personnel at any time, who shall be designated in the same manner as is provided for in paragraph 2 of this Section with regard to the initial lists. Annually, no more than 40 individuals from the list of Designated Personnel shall be subject to substitution. This limitation shall not apply to the replacement of individuals due to permanent physical incapacity or death, or to deletion of an individual from the list of Designated Personnel in accordance with paragraph 5 of this Section. Replacement of an individual due to permanent physical incapacity, death or deletion from the list shall be accomplished in the same manner as is provided for in paragraph 2 of this Section.

4. Following receipt of the initial list of Designated Personnel or the initial list of Transport Personnel or of subsequent changes thereto, the Party receiving such information shall prepare for the issuance of such visas and other documents as may be required to ensure that each individual on the list of Designated Personnel or the list of Transport Personnel to whom it has agreed may enter and remain in its territory for the purpose of carrying out activities related to verification in accordance with this Protocol. Such visas and documents shall be provided by the Party carrying out the explosion only to the individuals whose names are included on the lists provided by the Verifying Party, in accordance with paragraph 3 of Section X of this Protocol, upon receipt of such lists. Such visas and documents shall be valid for multiple entry throughout the period of preparation and conduct of the particular explosion.

5. If a Party determines that an individual included on the list of Designated Personnel or the list of Transport Personnel of the other Party has violated the provisions of this Protocol or has ever committed a criminal offense in its territory, or has ever been sentenced for committing a criminal offense, or has ever been expelled from its territory, the Party making such a determination shall so notify the other Party of its objection to the continued inclusion of this individual on the list. If at that time this individual is present in the territory of the Party raising the objection, the other Party shall immediately recall this individual from the territory of the Party raising this objection and immediately thereafter delete that individual from the list of Designated Personnel or from the list of Transport Personnel.

6. Designated Personnel with their personal baggage and equipment of the Verifying Party shall be permitted to

enter the territory of the Party carrying out the explosion at the designated point of entry, to remain in that territory and to exit through the designated point of entry.

7. Designated Personnel and Transport Personnel shall be accorded the following privileges and immunities for the entire period they are in the territory of the Party carrying out the explosion and thereafter with respect to acts previously performed in the exercise of their official functions as Designated Personnel or Transport Personnel:

(a) Designated Personnel and Transport Personnel shall be accorded the inviolability enjoyed by diplomatic agents pursuant to Article 29 of the Vienna Convention on Diplomatic Relations of April 18, 1961;

(b) living and working quarters occupied by Designated Personnel and Transport Personnel carrying out activities in accordance with this Protocol shall be accorded the inviolability and protection accorded the quarters of missions and diplomatic agents pursuant to Articles 22 and 30 of the Vienna Convention on Diplomatic Relations;

(c) archives, documents, papers and correspondence of Designated Personnel and Transport Personnel shall enjoy the inviolability accorded the archives, documents, papers and correspondence of missions and diplomatic agents pursuant to Articles 24 and 30 of the Vienna Convention on Diplomatic Relations. In addition, the aircraft or other transport vehicles of the Verifying Party shall be inviolable;

(d) Designated Personnel and Transport Personnel shall be accorded the immunities accorded diplomatic agents pursuant to paragraphs 1, 2, and 3 of Article 31 of the Vienna Convention on Diplomatic Relations. Immunity from jurisdiction of Designated Personnel or Transport Personnel may be waived by the Verifying Party in those cases in which it is of the opinion that immunity would impede the course of justice and it can be waived without prejudice to the implementation of the provisions of this Protocol. Waiver must always be express;

(e) Designated Personnel and Transport Personnel carrying out their activities in accordance with this Protocol shall be accorded the exemption from dues and taxes accorded diplomatic agents pursuant to Article 34 of the Vienna Convention on Diplomatic Relations;

(f) living and working quarters occupied by Designated Personnel and Transport Personnel carrying out their activities in accordance with this Protocol shall be accorded the exemption from dues and taxes accorded mission premises pursuant to Article 23 of the Vienna Convention on Diplomatic Relations; and

(g) Designated Personnel and Transport Personnel shall be permitted to bring into the territory of the Party carrying out the explosion, without payment of any customs duties or related charges, articles for their personal use, with the exception of articles the import or export of which is prohibited by law or controlled by quarantine regulations.

8. Designated Personnel and Transport Personnel shall not engage in any professional or commercial activity for personal profit in the territory of the Party carrying out the explosion.

9. Without prejudice to their privileges and immunities, Designated Personnel and Transport Personnel shall be obliged to respect the laws and regulations of the Party carrying out the explosion and shall be obliged not to interfere in the internal affairs of that Party.

10. If the Party carrying out the explosion considers that there has been an abuse of privileges and immunities specified in paragraph 7 of this Section, consultations shall be held between the Parties to determine whether such an abuse has occurred and, if so determined, to prevent a repetition of such an abuse.

SECTION X. ENTRY, TRANSPORT, FOOD, LODGING AND PROVISION OF SERVICES FOR DESIGNATED PERSONNEL AND TRANSPORT PERSONNEL

1. The Party carrying out the explosion shall ensure Designated Personnel and Transport Personnel access to its territory for the purposes of carrying out activities related to verification, in accordance with this Protocol, and shall provide these personnel with such other assistance as may be necessary to enable them to carry out these activities. Following notification by the Verifying Party of its intention to conduct hydrodynamic yield

measurement or to carry out on-site inspection, Designated Personnel shall have the right to be present at the site of the explosion to carry out activities in accordance with this Protocol at such times and for such periods as required to carry out these activities. The specific times and periods for carrying out such activities shall be specified in the coordinated schedule specified in paragraph 6 of Section XI of this Protocol.

2. The number of Designated Personnel shall not exceed:

(a) when exercising their rights and functions associated with drilling, logging, hole surveying, and coring, if this work is carried out by Designated Personnel operating their own equipment or equipment leased from the Party carrying out the explosion, 25;

(b) when exercising their rights and functions associated with observing drilling, logging, hole surveying, and coring performed by the Party carrying out the explosion, or when Designated Personnel perform logging, hole surveying, or sidewall rock sampling, 10;

(c) when exercising their rights and functions associated with the confirmation of the validity of geological and geophysical information, the number of emplacement holes plus three;

(d) when exercising their rights and functions associated with the use of hydrodynamic yield measurement equipment, the number of explosives plus three, plus the number of recording facilities specified in paragraph 5 of Section VIII of this Protocol multiplied by seven; and, with respect to group explosions in which radio controlled recording facilities are employed, three per recording facility, plus seven for the command and monitoring facility;

(e) when exercising their rights and functions associated with the use of a local seismic network, 15;

(f) for administrative, coordination, clerical, and health and safety matters, when Designated Personnel described in subparagraphs (a), (b), (c), (d), and (e) of this paragraph are present, eight; and

(g) if the Verifying Party provides food and housing for Designated Personnel identified in subparagraphs (a), (b), (c), (d), (e), and (f) of this paragraph, six.

3. No less than 20 days prior to the planned arrival of its Designated Personnel or equipment at the point of entry to carry out activities related to verification of a particular explosion, the Verifying Party shall provide the Party carrying out the explosion with:

(a) a list of the names of the Designated Personnel, their passports and documentation, and a list of the names of the Transport Personnel, their passports and documentation, who will carry out activities related to verification of a particular explosion;

(b) the names of the Designated Personnel Team Leader and deputy team leader, and the names of those individuals from the Designated Personnel who will escort equipment of the Verifying Party to the site of the explosion;

(c) confirmation of the point of entry to be used;

(d) the scheduled date and the estimated time of arrival of Designated Personnel at the point of entry; and

(e) designation of the mode of transport to be used.

No more than 15 days following receipt of the lists, passports, and documentation specified in subparagraph (a) of this paragraph, the Party carrying out the explosion shall return those passports to the Verifying Party with the visas and documents specified in paragraph 4 of Section IX of this Protocol.

4. If a transport aircraft other than a regularly scheduled commercial aircraft is used for transportation, its flight path shall be along airways that are agreed upon by the Parties, and its flight plan shall be filed in accordance with the procedures of the International Civil Aviation Organization applicable to civil aircraft, including in the remarks section of the flight plan a confirmation that the appropriate clearance has been obtained. The Party carrying out the explosion shall provide parking, security protection, servicing, and fuel for the aircraft of the Verifying Party at the point of entry. The Verifying Party shall bear the cost of such fuel and servicing.

5. The Party carrying out the explosion shall ensure that any necessary clearances or approvals are granted so as to enable Designated Personnel, their baggage, and

equipment of the Verifying Party to arrive at the point of entry by the estimated arrival date and time.

6. The Party carrying out the explosion shall assist Designated Personnel and Transport Personnel and their baggage in passage through customs without undue delay. The Party carrying out the explosion shall provide transportation between the point of entry and the site of the explosion for Designated Personnel, for their baggage and equipment of the Verifying Party, so as to enable such personnel to exercise their rights and functions in the time periods provided for in this Protocol.

7. The Party carrying out the explosion shall have the right to assign its personnel to escort Designated Personnel and Transport Personnel while they are in the territory of the Party carrying out the explosion.

8. Except as otherwise provided for in this Protocol, movement and travel of Designated Personnel and Transport Personnel shall be subject to the authorization of the Party carrying out the explosion.

9. During the period Designated Personnel and Transport Personnel are in the territory of the Party carrying out the explosion, the Party carrying out the explosion shall provide food, living and working facilities, secure places for storing equipment, transportation, and medical services for such personnel. If the Verifying Party desires to provide its own food or housing units for its Designated Personnel, or food for its Transport Personnel during their stay in the territory of the Party carrying out the explosion, the Party carrying out the explosion shall provide such assistance as may be necessary for such food and housing units to arrive at the appropriate locations. If the Verifying Party provides its own housing units, they shall be delivered to the point of entry no less than 30 days prior to the arrival of Designated Personnel. The Party carrying out the explosion shall have the right to inspect these housing units upon their arrival at the point of entry for a 30-day period, without the presence of personnel of the Verifying Party.

10. The Party carrying out the explosion shall ensure the Designated Personnel Team Leader or his designated representative access at all times to means of direct communications between the site of the explosion and the embassy of the Verifying Party, and shall provide Designated Personnel with telephone communications between their working facilities and living accommodations at the site of the explosion. The Designated Personnel Team Leader or his designated representative shall also have

the right to use at all times satellite communications to ensure communications via the International Maritime Satellite Organization (INMARSAT) commercial satellite system, or a system of equivalent performance, between the site of the explosion and the telephone communications system of the Verifying Party. If the Party carrying out the explosion does not provide such communications, Designated Personnel shall have the right to use their own equipment specified in paragraph 1(h) of Section VIII of this Protocol. In this case, installation and alignment of all such equipment shall be done jointly. All equipment of this system, except the remote control unit, shall be locked and placed under seals of both Parties, and neither Party shall have access to this equipment except under the observation of personnel of the other Party. Designated Personnel shall have exclusive use of the remote control unit. If the Verifying Party provides satellite communications equipment, personnel of the Party carrying out the explosion shall have the right, under the observation of Designated Personnel, to make the following modifications provided they do not degrade the quality of communications:

(a) install bandpass filters, to limit the frequency range, in the antenna signal transmission and reception lines;

(b) modify the remote control unit to prevent manual tuning; and

(c) modify the satellite communications equipment to allow the Party carrying out the explosion to monitor all transmissions.

11. At the site of the explosion, Designated Personnel shall observe all safety rules and regulations applicable to the personnel of the Party carrying out the explosion, as well as those additional restrictions with regard to access and movement as may be established by the Party carrying out the explosion. Designated Personnel shall have access only to the areas where they will directly exercise their rights and functions in accordance with Sections V, VI, and VII of this Protocol.

12. Designated Personnel shall not be given or seek access by physical, visual or technical means to the interior of the explosive canister, to documentary or other information descriptive of the design of an explosive, or to equipment for control and firing of explosives. The Party carrying out the explosion shall not locate documentary or other information descriptive of the design of an explosive in such ways as to impede Designated Personnel in carrying out their activities in accordance with this Protocol.

13. With the exception of those cases in which the Parties otherwise agree, all costs related to the activities of Designated Personnel and Transport Personnel carried out in accordance with this Protocol shall be borne by the Verifying Party, including costs for materials, equipment, leased equipment, and services that have been requested by and provided to the Verifying Party, as well as costs for transportation, food, living and working facilities, provision of medical assistance, and communications. These costs shall be billed at the standard or official rates existing in the territory of the Party carrying out the explosion.

14. The Verifying Party shall have the right to include among its Designated Personnel a medical specialist, who shall be allowed to bring medications, medical instruments, and portable medical equipment agreed upon by the Parties. If Designated Personnel are treated in a medical facility of the Party carrying out the explosion the medical specialist shall have the right to consult on the recommended treatment and monitor the course of medical treatment at all times. The medical specialist of the Verifying Party shall have the right to require the Party carrying out the explosion to provide emergency evacuation of any individual of Designated Personnel who is ill or suffered an accident to a mutually agreed medical facility in the territory of the Party carrying out the explosion or to the point of entry for emergency medical evacuation by the Verifying Party. Designated Personnel shall have the right to refuse any treatment prescribed by medical personnel of the Party carrying out the explosion, and in this case the Party carrying out the explosion shall not be responsible for any consequences of such refusal. Such refusal must always be express.

SECTION XI. PROCEDURES FOR CONSULTATION AND COORDINATION

1. To facilitate the implementation of this Protocol, the Parties shall use the Joint Consultative Commission, as provided for in the Treaty, that shall meet at the request of either Party. For each explosion for which activities are carried out in accordance with this Protocol, the Parties shall establish a Coordinating Group of this Commission.

2. The Coordinating Group shall be responsible for coordinating the activities of the Verifying Party with the activities of the Party carrying out the explosion.

3. The Coordinating Group shall operate throughout the entire period of preparing and carrying out of the activities related to verification for a particular explosion, until the departure of Designated Personnel from the territory of the Party carrying out the explosion.

4. The Representative of the Verifying Party to the Coordinating Group shall be the Designated Personnel Team Leader, whose name shall be provided simultaneously with the notification of intent to carry out activities related to verification for a particular explosion. All members of the Coordinating Group from the Verifying Party shall be drawn from the list of Designated Personnel. Within 15 days following receipt of this notification, the Party carrying out the explosion shall provide the Verifying Party with the name of its Representative to the Coordinating Group.

5. The first meeting of the Coordinating Group shall be convened in the capital of the Party carrying out the explosion within 25 days following notification by the Verifying Party of its intent to conduct activities related to verification for a particular explosion. Thereafter, the Coordinating Group shall meet at the request of either Party.

6. At the first meeting of the Coordinating Group, the Party carrying out the explosion shall present a list, including times and durations, of all its planned activities that are to be carried out as from the first day of this meeting and affect the rights of the Verifying Party provided in this Protocol. The Verifying Party shall provide a preliminary statement of its requirements for technical and logistical support for the activities related to verification that it intends to carry out. Within 10 days the Parties shall develop and agree upon a coordinated schedule, including specific times and durations for carrying out activities related to verification, that shall ensure the rights of each Party provided in this Protocol.

7. Agreement of the Representative of each Party in the Coordinating Group shall constitute agreement of the Parties with respect to the following specific provisions of this Protocol:

(a) Section I: paragraph 5;

(b) Section IV: paragraphs 9, 10(b), and 11;

(c) Section V: paragraphs 2, 3, 4(b), 6(a), 7, 8(d), 9(f), 10 and 11;

(d) Section VI: paragraphs 2, 3, 4, 5, 6, and 9;

(e) Section VII: paragraphs 1(b) and 2(c);

(f) Section VIII: paragraphs 1(g), 4, 5(b), 5(g), and 8(f);

(g) Section X: paragraphs 4 and 13; and

(h) Section XI: paragraph 6.

8. Upon completion of activities related to verification at the site of an explosion, the Designated Personnel Team Leader shall prepare, at his option, either at the site of the explosion or in the capital of the Party carrying out the explosion, a report of the activities provided for in this Protocol that were carried out by Designated Personnel. The report shall be factual, and shall list the types of activities in chronological order. Lists of information, of photographs, and of data required in accordance with this Protocol and provided by Designated Personnel to the Party carrying out the explosion and received by Designated Personnel from the Party carrying out the explosion in the course of conducting activities related to verification on the territory of the Party carrying out the explosion shall be appended to the report. The report shall be provided to the Party carrying out the explosion in its capital by the Designated Personnel Team Leader within 15 days following completion of activities related to verification at the site of the explosion.

9. If, in the course of implementing activities related to verification in accordance with this Protocol, questions arise requiring prompt resolution, such questions shall be considered by the Coordinating Group. If the Coordinating Group is unable to resolve such questions, they shall immediately be referred to the Joint Consultative Commission for resolution.

10. Within 30 days after the Party carrying out the explosion provides notification of its intent to carry out a group explosion having a planned aggregate yield exceeding 150 kilotons, a meeting of the Joint Consultative Commission shall be convened at the request of either Party with the goal of reaching agreement on specific procedures as specified in paragraph 2 of Section II of this Protocol. The explosion shall be conducted no less than 150 days following agreement of the Parties upon such procedures.

11. The Joint Consultative Commission may, as necessary, establish and amend procedures governing the activities of the Coordinating Group.

SECTION XII. RELEASE OF INFORMATION

1. Nothing in the Treaty and this Protocol shall affect the proprietary rights of either Party in information provided by it in accordance with the Treaty and this Protocol, or in information that may be disclosed to the other Party or that may become known to the other Party in preparing for, or carrying out, explosions. Claims to such proprietary rights, however, shall not impede implementation of the provisions of the Treaty and this Protocol.

2. Public release of the information provided in accordance with this Protocol or publication of material using such information may take place only with the agreement of the Party carrying out an explosion. Public release of the results of observation or measurements made by Designated Personnel may take place only with the agreement of both Parties.

SECTION XIII. ENTRY INTO FORCE

This Protocol is an integral part of the Treaty. It shall enter into force on the date of entry into force of the Treaty and shall remain in force as long as the Treaty remains in force.

DONE at Washington, in duplicate, this first day of June, 1990, in the English and Russian languages, both texts being equally authentic.

FOR THE UNITED STATES OF AMERICA:	FOR THE UNION OF SOVIET SOCIALIST REPUBLICS:
President of the United States of America	President of the Union of Soviet Socialist Republics

June 22, 1990

SECTION BY SECTION ANALYSIS OF THE PROTOCOL TO THE TREATY ON THE LIMITATION OF UNDERGROUND NUCLEAR WEAPON TESTS

The Protocol consists of a preamble and thirteen sections, organized as follows:

Section I.	Definitions
Section II.	Test Sites
Section III.	Verification Measures
Section IV.	Notifications and Information Relating to Tests
Section V.	Hydrodynamic Yield Measurement Method
Section VI.	Seismic Yield Measurement Method
Section VII.	On-Site Inspection
Section VIII.	Equipment
Section IX.	Designated Personnel and Transport Personnel
Section X.	Entry, Transport, Food, Lodging, and Provision of Services for Designated Personnel and Transport Personnel
Section XI.	Procedures for Consultation and Coordination
Section XII.	Release of Information
Section XIII.	Entry Into Force

PREAMBLE

In the Preamble the Parties confirm the provisions of the Treaty Between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Underground Nuclear Weapon Tests (TTBT) and state their conviction that it is necessary to ensure effective verification of compliance with that Treaty.

SECTION I.

In Section I, the definitions of significant terms used throughout the Protocol are set out in roughly the order in which they appear in the Protocol. Deviations from that order are intended to place related terms in proximity to each other.

It should be noted that important concepts that guide the verification approach taken in the Protocol are to be found in the definitions.

1. A "test site" is defined as the specified location at which underground nuclear weapon tests are conducted by each Party. In Section II, these test sites are precisely identified and the procedures for delineating new test sites are precisely

described. The definition of test sites and the requirements of Section II establish that all nuclear weapon tests must be conducted at test sites.

2. The term "test" is used to describe an underground nuclear explosion at a test site or two or more underground nuclear explosions at a test site taking place within one-tenth second, and separated by no more than two kilometers. The verification rights set forth in the Protocol are tied to a "test," and flow from its planned yield. If a test is made up of more than one explosion, the planned yield attributed to the test is the aggregate of the planned yields of the individual explosions within the test.

3. An "explosion" is defined as the release of nuclear energy from an explosive canister. Thus, regardless of the number of explosives within an explosive canister, there will be only one "explosion" for the purposes of the Protocol for each explosive canister.

4. An "explosive canister" is defined so as to establish that for every "explosion" there is an explosive canister. Whether the "canister" is a container, or just the outermost covering of the explosive or explosives, there will always be a canister external to an explosive or group of explosives.

5-6. The terms "Testing Party" and "Verifying Party" are defined so as to make the terms applicable prior to the actual undertaking of any activities; thus the Party planning to carry out a test is the "Testing Party," and the Party entitled to verify that test is, from the moment it is notified of the test, the "Verifying Party."

7. The term "Designated Personnel" is used to mean all the individuals who actually are engaged in carrying out verification activities in the territory of the Testing Party in accordance with the Protocol. Designated Personnel, for any test, are nationals of the Verifying Party, drawn from a list of individuals accepted by the Testing Party.

8. The term "Transport Personnel" is used to describe those individuals, drawn from a list accepted by the Testing Party, who are nationals of the Verifying Party and who provide transportation to and from the point of entry, for Designated Personnel, their baggage, and equipment of the Verifying Party.

9. The term "point of entry" is used to describe the place, in the territory of the Testing Party, at which Transport Personnel, Designated Personnel and equipment of the Verifying Party enter and exit the territory of the Testing Party. The points of entry are specified in the definition: Washington,

D.C., and Travis Air Force Base for the U.S., and Moscow and Leningrad for the U.S.S.R. Designated Personnel and Transport Personnel may enter at either point of entry of the Testing Party. Equipment, however, may enter the territory of the Testing Party only through Travis Air Force Base, in the case of the U.S., and Moscow, in the case of the U.S.S.R. The airports associated with U.S. points of entry are limited to Travis Air Force Base and Dulles International Airport near Washington, D.C., and Sheremetyevo-2 for Moscow and Pulkovo-2 for Leningrad.

10. The term "hydrodynamic yield measurement method" is used to describe the method of measuring the yield of an explosion by measuring the properties of the shock wave produced by an explosion as a function of time, using sensors and, in some cases, transducers emplaced by the Verifying Party in one or more satellite holes adjacent to the hole or holes in which an explosion or explosions are conducted by the Testing Party. The procedures relating to activities of Designated Personnel carrying out hydrodynamic yield measurements are set forth in Section V of the Protocol.

11. The term "seismic yield measurement method" is used to describe the method of deriving the yield of one or more explosions constituting a test by means of measuring the motion

of the earth produced by the test at distances of hundreds of miles. The procedures relating to activities of Designated Personnel carrying out seismic measurements are set forth in Section VI of the Protocol.

12. The term "on-site inspection" is used to describe activities of Designated Personnel, at the site of the test, designed to obtain information about the physical and geological conditions under which the test will be conducted and to validate information provided by the Testing Party. The procedures relating to activities of Designated Personnel carrying out on-site inspection are set forth in Section VII of the Protocol.

13. The term "emplacement hole" describes each hole (including tunnels, adits and shafts) in which the Testing Party emplaces one or more explosive canisters and its own associated equipment related to a test.

14. The term "end of the emplacement hole" does not necessarily mean the physical end of the hole, but is used to describe a reference point established by the Testing Party along the axis of the emplacement hole, prior to the emplacement of an explosive canister, for each explosive canister.

15. The term "satellite hole" means each of the holes (including drill-holes, tunnels, adits and shafts) in which the Verifying Party installs its equipment, described in definitions 23 and 24, for using the hydrodynamic yield measurement method.

16-17. For purposes of the use of the hydrodynamic yield measurement method, the term "standard configuration" is used to describe a test configured in conformity with parameters set forth in Section V of the Protocol for either tests that utilize a vertical emplacement hole (or holes) or a horizontal emplacement hole (or holes). The Protocol does not require that a test be conducted in a particular configuration; rather the Protocol describes certain characteristics of a test configuration, in terms of, for example, dimensions of each emplacement hole, dimensions of explosive canisters, and parameters for emplacement of explosives and diagnostics, and then provides that if a test configuration has these characteristics it will be considered "standard." If a test does not have these configuration characteristics its configuration is considered "non-standard."

18. The term "hydrodynamic measurement zone" is used to describe a region of prescribed dimensions surrounding an explosive canister within which hydrodynamic yield measurement may be carried out.

19. The term "reference test" is used to describe a particular test of standard configuration with respect to which the Verifying Party may use the hydrodynamic yield measurement method for the purpose of establishing a basis of comparison for teleseismic measurements of that test and an associated test of non-standard configuration.

20. The term "emplacement point" is used to describe that point in an emplacement hole at which the center point of an explosive canister is located.

21. The term "choke section" is used to describe a barrier designed to limit and delay the flow of energy from an explosive canister.

22. The term "area of a pipe" or "area of a cableway" is defined as the area of the external cross section of a pipe or a cableway at the point at which the pipe or cableway, within a specified region, is largest.

23. The term "sensing elements and cables" is used to describe the sensors, including switches, used by the Verifying Party as an integral element of equipment used for the hydrodynamic yield measurement method and installed in a satellite hole to determine the arrival time of the shock wave. Transducers,

which otherwise might be considered sensing elements, are excluded from the term as it is used in the Protocol, and are defined separately.

24. The term "transducers" is used to describe particular devices installed by Designated Personnel in a satellite hole, to measure properties of a shock wave other than its arrival time in certain prescribed situations.

25. The term "core sample" is used to describe an intact cylindrical sample of geologic material, such as rock, with prescribed minimum dimensions. If a given sample is not intact and of at least the prescribed dimensions, it is not a "core sample" for purposes of the Protocol.

26. The term "rock fragment" is used to describe an irregularly shaped piece of rock of at least 10 cubic centimeters in volume. If a given fragment is less than 10 cubic centimeters in volume it is not a "rock fragment" for the purposes of the Protocol.

27. The term "geodetic measurements" is used to describe the means of determining the locations of points in tunnels or cavities by surveying techniques.

28. The term "Designated Seismic Station" means any one of the three named stations in the United State and of the three named stations in the U.S.S.R at which Designated Personnel may be present during a test to carry out seismic measurement activities provided for in Section VI of the Protocol.

29. The term "Bilateral Consultative Commission" (BCC) is the name of the Commission established by the Protocol in which the Parties may address certain matters relating to the Protocol.

30. The term "Coordinating Group" is the name given to the subordinate body of the Bilateral Consultative Commission that is established for each test.

31. The term "coordinated schedule" refers to the schedule that will be established in the Coordinating Group with respect to a particular test. This schedule will specify the precise times and durations of each verification activity.

32. The term "Nuclear Risk Reduction Centers" means the centers, established by the agreement between the U.S. and the U.S.S.R. on the establishment of Nuclear Risk Reduction Centers of September 15, 1987, that will be used for transmitting notifications and other information between the Parties as provided for in the Protocol.

SECTION II.

In this Section the test sites of each Party are specified. This removes any uncertainty as to where nuclear weapon tests may be conducted following entry into force of the Treaty.

Paragraph 1 requires that simultaneous with entry into force, i.e., upon the exchange of instruments of ratification, each Party must provide the other with a written description of the boundaries, and a diagram to a prescribed scale, of its test sites. In the case of the United States only one test site is named; in the case of the U.S.S.R., two test sites are named.

Paragraph 2 permits a Party to change its test sites, either by revising the boundaries of an existing test site or by establishing a new site or sites. However, a Party may not conduct a test at a new site or in a newly added area of an existing site unless at least 12 months before the test it has provided the other Party with the same information relating to boundaries, and the same kind of diagram, that each Party must provide upon entry into force of the Treaty with respect to existing test sites. It is thus clear that establishment of a new or expanded test site does not require amendment of the Protocol.

Paragraph 3 establishes that all nuclear weapon tests must be conducted at test sites specified in paragraph 1 or in accordance with procedures set forth in paragraph 2, and that a Party may not establish a test site outside its territory.

Paragraph 4 establishes that all underground nuclear explosions at a test site are deemed nuclear weapon tests. Thus, any explosion at a test site is covered by the TTBT, including its Protocol, while all explosions elsewhere are covered by the Treaty Between the United States of America and the Union of Soviet Socialist Republics on Underground Nuclear Explosions for Peaceful Purposes (PNET), including its Protocol. The question of how many tests may be involved if explosions are detonated in proximity and within a given period of time is determined in accordance with the definition of "test" in Section I.

SECTION III.

This Section sets forth the basic verification rights of each Party with respect to tests having specified minimum planned yields. The verification rights include use of the hydrodynamic yield measurement method, use of the seismic yield measurement method and on-site inspection. In order to provide each Party an opportunity to be fully informed with respect to a planned test and fully prepared prior to commencing verification activities, the first test of the Testing Party that would be subject to the verification measures of the Protocol will be the first test it conducts 200 days following entry into force of the Treaty. The period of 200 days is chosen because that is the minimum period of advance notice of a test that a Party planning a test (the Testing Party) must provide the other Party (the Verifying Party.)

Paragraph 1 establishes that the particular verification rights of the Verifying Party depend on the planned yield of the test. If a test is made up of more than one explosion, the verification rights attach to each explosion within a test, based on the aggregate yield of the test. If the planned yield of the test exceeds 35 kilotons but does not exceed 50 kilotons, the Verifying Party has the right to on-site inspection (specified in Section VII). If the planned yield of a test exceeds 50 kilotons, the Verifying Party has the right to use the hydrodynamic yield measurement method (specified in Section V), the seismic method (specified in Section VI), or both. If, with respect to a test having a planned yield exceeding 50 kilotons, the Verifying Party elects not to use the hydrodynamic yield measurement method, the Verifying Party may carry out on-site inspection, seismic yield measurements, or both. In the exercise of its verification rights, the Verifying Party may carry out fewer than all the activities that it has a right to carry out.

In addition to the rights provided in paragraph 1, paragraph 2 establishes the right of the Verifying Party to use the hydrodynamic yield measurement method for at least two tests in each of the first five calendar years following entry into force of the Protocol. Thus, paragraph 2(a) provides that in any of those five years, if a Party conducts at least two tests but does not conduct at least two tests having a planned yield exceeding 50 kilotons, the other Party shall have the right to use the hydrodynamic yield measurement method with respect to two tests, as if they each had a planned yield exceeding 50 kilotons. The two tests would be selected by the Testing Party from among those having the highest planned yields that it conducts in that calendar year.

Paragraph 2(b) provides that for subsequent calendar years, if a Party conducts at least one test, but does not conduct at least one test having a planned yield exceeding 50 kilotons, the other Party has the right to use the hydrodynamic yield measurement method with respect to that test, which would be selected by the Testing Party as one of those having the highest planned yields that it conducts in the given calendar year.

Paragraph 2(c) provides that if a Party postpones from one year to the next a test having a planned yield of 50 kilotons or less, with respect to which the Verifying Party had notified the Testing Party of its intent to exercise its right to use the hydrodynamic yield measurement method, then the right of the Verifying Party to use that method on the postponed test is retained, as an additional entitlement in the year in which the postponed test is conducted.

Paragraph 2(d) provides that if a Party opens a new test site, the Verifying Party shall have the right to use the hydrodynamic yield measurement method on two tests in each calendar year for five years from among the tests the Testing Party conducts at that new site beginning with the first test the Testing Party conducts. If the Testing Party does not conduct at least two tests having a planned yield exceeding 50 kilotons at the new site in each of those years, the Verifying Party has the right to use the hydrodynamic yield measurement method on two tests selected by the Testing Party from among those tests having the highest planned yields that it conducts at the new site. This right does not apply to the new area of a test site in the case of a change in the boundary of an existing test site.

Paragraph 3 establishes timing and spacing requirements for tests involving more than one explosion when the Verifying

Party has notified the Testing Party of its intent to use the hydrodynamic yield measurement method. In such a case, unless the Parties agree on other verification measures for the test, this paragraph requires the Testing Party to locate each explosive canister in the test at least 50 meters from any other explosive canister in that test, and to time each explosion so as to permit hydrodynamic measurements for at least 30 meters in the associated satellite hole for each explosion.

Paragraph 4 provides that, if the Verifying Party has notified the Testing Party of its intent to use the hydrodynamic yield measurement method with respect to a specific test, if the Testing Party conducts the test in more than one emplacement hole, only one such hole may have characteristics, or may contain explosive canisters having characteristics, different from the characteristics that are associated with a test of standard configuration as described in Section V, unless the Parties agree on verification measures for that test.

Paragraph 5 establishes two timing constraints on testing. First, the Testing Party may not conduct a test having a planned yield over 35 kilotons within two seconds of any other test having a planned yield exceeding 35 kilotons, unless the Parties agree on verification measures for those tests.

Second, no test may be conducted within 15 minutes before or after a reference test, unless the Parties otherwise agree.

Paragraph 6 prohibits a Party from conducting a test having a planned yield over 35 kilotons in a cavity whose volume exceeds 20,000 cubic meters, unless the Parties agree on verification measures for that test.

By virtue of paragraph 7, if the Testing Party conducts a test of non-standard configuration (as defined in Section V) having a planned yield exceeding 50 kilotons, and if the Verifying Party notifies the Testing Party of its intention to use the hydrodynamic yield measurement method with respect to that test, the Testing Party must also provide, if the Verifying Party so requests, a "reference test" meeting the criteria specified in Section V. The Verifying Party may use this test to compare the yields of the reference test and the associated test of non-standard configuration, measured through use of the hydrodynamic yield measurement method, with the yields of the reference test and associated test of non-standard configuration, measured by means of its national technical means. The Testing Party is obligated to provide the requested reference test (which may be a previously conducted test meeting the specified criteria) even if the Verifying Party does not actually carry out hydrodynamic measurements of the test of non-standard configuration.

Paragraph 8 contains certain limitations on the rights to require a reference test. Subparagraph (a) provides that if the Testing Party announces a reference test and the Verifying Party elects not to use the hydrodynamic measurement method with respect to that reference test, the Verifying Party shall forfeit its right to a reference test for future tests of non-standard configuration that would have been associated with that test, provided the Testing Party actually conducts the announced reference test. Subparagraph (b) provides that at any given time the Testing Party may have identified only one reference test that is not associated with a particular test of non-standard configuration. The purpose of this provision is to prevent the Testing Party from identifying a number of reference tests, for each one of which the Verifying Party would be compelled to use the hydrodynamic yield measurement method without knowing which test of non-standard configuration, if any, would ever be referenced, and to prevent the Testing Party from taking advantage of a decision by the Verifying Party not to use the hydrodynamic yield measurement method by subsequently locating future tests of non-standard configuration within the range of the reference test. As a result of subparagraph (b), the Testing Party will never have more than one reference test "on the books" at any given time that is not associated with a test of non-standard configuration, and the Verifying Party will not have to decide whether or not to use the hydrodynamic yield measurement method on more than one test at a time without knowing the identity of the test of non-standard configuration for which it would serve as a reference.

Subparagraph (c) provides that if the Verifying Party elects not to use the hydrodynamic yield measurement method with respect to a reference test announced as being associated with a previously conducted test of non-standard configuration, the Verifying Party shall forfeit its right to any reference test for that previously conducted test of non-standard configuration whether or not the Testing Party actually conducts the announced reference test.

Paragraph 9 provides that once the Verifying Party has provided its initial notification as to which, if any, verification activities it intends to carry out, that notification cannot be changed, other than to delete activities, unless the Testing Party either changes the location of the test by more than one minute of latitude or longitude, or changes the planned yield from 50 kilotons or less to more than 50 kilotons. In either of those cases, the Verifying Party has the right to provide a revised notification and to carry out any verification activity originally available under the Protocol. The Testing Party would also be prohibited from conducting the changed test for 180 days, unless the Parties otherwise agreed.

Paragraph 10 establishes that Designated Personnel have the right to carry out verification activities 24 hours a day, consistent with safety requirements, at the test site or Designated Seismic Stations. This paragraph also requires that operations requiring the participation of personnel of both Parties be carried out in a manner consistent with the Testing Party's normal technical operations and practices at the test site or Designated Seismic Station. Designated Personnel are prohibited from interfering with activities of personnel of the Testing Party, and are also held responsible for their own equipment and operations. Paragraph 10 guarantees that the Testing Party is not required to delay a test because of a malfunction of Verifying Party equipment or inability of Designated Personnel to carry out their functions, unless the Testing Party caused the problem. Paragraph 10(b)(ii) gives the Testing Party full responsibility for preparation and conduct of a test, and provides that it shall have exclusive control over it.

Paragraph 11 provides that if the Verifying Party has notified the Testing Party of its intent to carry out verification activities with respect to a test, the Testing Party may not change the timing of its operations related to the conduct of that test if those changes would preclude or significantly limit the ability of Designated Personnel to carry out their verification rights provided in this Protocol. If the Verifying Party determines that such is the case, the Coordinating Group must meet to agree on a revised coordinated schedule that will ensure the rights of both Parties. In the absence of agreement, the original schedule will continue to govern as if such change had never been proposed. Either Party may also request that any question be taken up in the BCC in accordance with the provisions of the Protocol.

SECTION IV.

Section IV sets forth the procedures and requirements covering the provision of notices and information, changes in information previously provided, operations leading up to a test, and changes in the configuration or certain essential characteristics of a test.

Paragraph 1 requires that unless otherwise specified in the Protocol, all notifications shall be transmitted through the Nuclear Risk Reduction Centers (NRRC). Other information provided under the Protocol may also be transmitted, if appropriate, through these Centers. All notices must be in writing.

The Section as a whole establishes the deadlines and requirements governing notifications and provision of information relating to nuclear tests and verification activities. The basic structure is as follows:

Time of Notification	Content of Notification
June 1 (para 2)	Testing Party provides projected number of tests covered by the Protocol for the next calendar year, and indicates whether the number is sufficient to meet the requirements of paragraph 2 of Section III.
Entry into force (para 3)	Testing Party provides the information listed in paragraph 2 for a period of up to 18 months after entry into force, depending on the date of entry into force.
No less than 200 days prior to test (para 4)	Testing Party provides information on date, location, and configuration of a specific test and whether it will serve as a reference test.
Within 20 days of the notification required by para 4 (para 5)	Verifying Party notifies Testing Party whether or not it will carry out verification activities, and if so, which.
If the Testing Party indicates it will carry out verification activities, at least 20 days prior to test (paras 7, 8, 9)	Testing Party provides more specific information on test geology and configuration.
Two days prior to the test (paras 13 and 19)	Testing Party provides notification of period of readiness, and precise planned time of detonation.
One hour following detonation (para 18)	Testing Party provides actual time of detonation to Designated Personnel.

No less than 3 days following the test (para 19)	Testing Party provides actual time of detonation to nearest 0.1 sec.
Within one year following test (para 25)	At request of Verifying Party, clarification of information, to be provided within 30 days.

Paragraph 2 provides that by June 1 of a given year each Party must inform the other Party of the number of tests having a planned yield exceeding the Protocol notification thresholds or otherwise subject to the Protocol that it plans to conduct in the following calendar year. Paragraph 3 requires that on the date of entry into force of the Treaty, each Party must provide such a schedule covering the remainder of the calendar year in which the Treaty enters into force, and, if entry into force is after June 1, covering the following calendar year as well.

Paragraph 4 requires that at least 200 days prior to the planned date of any test for which verification rights are provided by the Protocol, the Testing Party shall provide the Verifying Party with the most accurate available information on the planned date and location of the test; whether the planned yield exceeds 35 kilotons, or exceeds 50 kilotons; the configuration of the test and whether it will serve as a reference test; the planned date of beginning of emplacement; the planned depth of each emplacement hole; the type of rock in which the test will take place; and the depth of the water table.

Within 20 days following the receipt of the information specified in paragraph 4 for a specific test, paragraph 5 requires the Verifying Party to indicate in a single notification, whether it will carry out verification activities with respect to that test; and, if so, it must specify the type or types of verification methods it will use, hydrodynamic, seismic, or on-site inspection.

Paragraph 6 contains a specific notification obligation for reference tests. If the Verifying Party, having previously notified the Testing Party of its intention, pursuant to paragraph 5, to use the hydrodynamic yield measurement method with respect to a test of non-standard configuration, requires a reference test for such test of non-standard configuration, it must make a request therefor in the Coordinating Group established for that test under Section XI. If a reference test is required, paragraph 6 requires the Testing Party then to notify the Verifying Party as to how it will provide the reference test, either by identifying a previous qualifying test or by identifying a future test that the Verifying Party may measure by use of the hydrodynamic yield measurement method. In any case, a test may serve as a reference test only if the Verifying Party either applied or had the opportunity to apply the hydrodynamic yield measurement method.

Paragraphs 7, 8, and 9 require the Testing Party to provide additional information, depending on the type of verification activity to be carried out, at least 120 days prior to the planned date of the test. If the Verifying Party indicates that it intends to use the hydrodynamic yield measurement method, paragraph 7 requires the Testing Party to provide information describing geological and geophysical characteristics of the test location; planned cross-sectional dimensions of each emplacement hole; configuration of known cavities larger than one cubic meter in the hydrodynamic measurement zone; stemming materials to be used; any plans to case emplacement and satellite holes and, if so, the casing materials to be used; a topographic map with a scale no smaller than 1:25,000 and contour intervals of 10 meters or less; overall drawings showing external dimensions of explosive canisters, choke sections, pipes and cableways connected to the explosive canister; locations for gas-blocking devices on the Verifying Party's cables; and whether the Testing Party will provide satellite communications from the test site.

Paragraph 8 deals with the information required when the Verifying Party notifies the Testing Party of its intent to use the seismic method. This is the same information required in the case of on-site inspection regarding geological and geophysical characteristics of the test site, planned cross-sectional dimensions of each emplacement hole, and location and configuration of known cavities larger than 1000 cubic meters within 300 meters of any emplacement point.

If the Verifying Party notifies the Testing Party of its intent to carry out on-site inspection, paragraph 9 requires the Testing Party to provide information on geological and geophysical characteristics of the test site; planned cross-sectional dimensions of each emplacement hole; location and configuration of known cavities larger than 1000 cubic meters within 300 meters of any emplacement point; plans for casing emplacement holes and description of casing materials; a topographic map with a scale no smaller than 1:25,000 and contour intervals of 10 meters or less; and whether the Testing Party will provide satellite communications from the test site. The scope of certain information dealing with features surrounding an emplacement hole required to be provided in accordance with this paragraph is different from the scope of similar information required to be provided in accordance with paragraph 7. The requirements set forth in paragraph 7 are expressed by reference to each hydrodynamic measurement zone, while for on-site inspection the zone of interest is defined in paragraph 9 to be the region within a radius of 300 meters from the planned emplacement point.

Paragraphs 10-12, 16-17, and 19-24 require the Testing Party to provide notice of changes in information previously provided, and prescribe certain notification requirements and constraints on the operations of the Testing Party to enable the Verifying Party to exercise effectively its verification rights as contemplated by the Protocol.

Paragraph 10 provides that the Testing Party shall immediately notify the Verifying Party of any change in the planned number of tests covered by the Protocol or in the information dealing with particular tests furnished under paragraph 4 and, if the Verifying Party has notified the Testing Party of its intent to exercise any of its verification rights, the information required to be furnished in accordance with paragraphs 6-9. The obligation to inform the Verifying Party of changes in information furnished in connection with a particular test is limited, in that certain changes need not be notified unless the Verifying Party has notified the Testing Party of its intent to carry out verification activities. In some cases, the Testing Party is required only to inform the Verifying Party of changes in information that are relevant to the particular verification activity selected. For example, the Testing Party must notify the Verifying Party of a change in the configuration of a test only if the Verifying Party has indicated its intention to use the hydrodynamic yield measurement method with respect to that test. In addition, changes in the information furnished in accordance with paragraphs 7, 8, and 9 with respect to the three types of verification activities, (hydrodynamic measurements, seismic measurements and on-site inspection, respectively,) need be provided only if, and to the extent that, the Verifying Party has indicated that it intends to conduct one or more of such activities.

Paragraph 11 requires the Testing Party also immediately to notify each Designated Personnel Team Leader of any change in the planned date of the test and those changes specified in paragraph 10 that relate to the particular verification activities that are being carried out. This requirement only applies when Designated Personnel are in the territory of the Testing Party. It avoids the delays that would occur if the required notices were only transmitted through the NRRC in the capital of the Verifying Party, and then had to be relayed back to operational personnel at the test site or Designated Seismic Stations in the territory of the Testing Party.

Paragraph 12 requires the Testing Party to notify both the Verifying Party and Designated Personnel Team Leaders (if Designated Personnel are in the Testing Party's territory) of any change in the timing of its operations that could affect the coordinated schedule of test and verification activities that will be established by the Parties in the Coordinating Group before the verification activities begin.

Paragraphs 13-19 deal with notifications and operations near the time of the test. Paragraph 13 deals with the situation in which Designated Personnel are already present at the test site or Designated Seismic Stations. Paragraph 13(a) requires that, no less than 48 hours prior to the planned time of the test, the Testing Party must notify each Designated Personnel Team Leader, in writing, of the planned time of the test to the nearest second, and the time for the beginning of the "period of readiness." If the Testing Party changes the planned time of the test, paragraph 13(b) requires that it immediately notify each Designated Personnel Team Leader, in writing. Paragraph 13(c) requires the Testing Party to conduct the test only during a period of readiness; paragraph 13(d) provides that the period of readiness can begin no earlier than six days after completion of stemming of the hydrodynamic measurement zone of each satellite hole, if the Verifying Party is conducting hydrodynamic yield measurements, and no more than five days before the planned date of the test, if the Verifying Party is conducting seismic measurements. Paragraph 13(e) allows the Testing Party to terminate the period of readiness at any time, in which case it must immediately notify each Designated Personnel Team Leader, in writing, that the period of readiness has been terminated. Further, as provided in paragraph 13(f), if the Testing Party terminates this period of readiness or changes the time for its beginning, it must notify each Designated Personnel Team Leader, in writing, of the time for beginning a new period of readiness at least 12 hours before such new period begins. All notifications in this and the following paragraphs are required to be provided in Universal Time Coordinated (UTC), as well as local time.

When the Testing Party has provided notification in accordance with paragraphs 13(a) and (b), paragraph 14 specifies that it may advance the actual time of the test, without further notification, by no more than five minutes.

After the Testing Party has started the event readiness signal (a signal required by paragraph 10(b) of Section V to be initiated in the interval of seven to 15 minutes before the test), paragraph 15(a) provides that if the Testing Party then delays the test and terminates the event readiness signal one second or more prior to the planned time of the test, it may then conduct the test, without further notification, at any time within 60 minutes after the originally planned time, provided it generates a new event readiness signal. If, on the other hand, it delays the test but does not terminate the event readiness signal at least one second prior to the planned time of the test, then, in accordance with paragraph 15(b), the Testing Party must end the event readiness signal, and cannot begin a new one within 20 minutes of the planned test time. In that case, the Testing Party must notify each Designated Personnel Team Leader, in writing, of the new planned time of the test at least 10 minutes prior to the beginning of a new event readiness signal.

Paragraph 16 requires that if the Testing Party delays the test by more than 60 minutes after it has provided notification in accordance with paragraphs 13(a) and (b), then it must notify each Designated Personnel Team Leader, in writing, of the new planned time of the test at least 30 minutes prior to that new planned time. Further, paragraph 17 requires that if a test is delayed by more than three hours during a period of readiness, the Testing Party must notify each Designated Personnel Team Leader, in writing, of the estimated period of delay.

Paragraph 18 requires the Testing Party to provide a notice specifying the actual time of the test, rounded to the nearest 0.1 second, to each Designated Personnel Team Leader within one hour following the test.

Paragraph 19 further provides that once the Testing Party has provided notification, at least 200 days in advance, of a test subject to the verification procedures of the Protocol, then it must provide certain additional notifications to the Verifying Party, whether the Verifying Party elects to pursue any of its verification rights or not. No less than 48 hours prior to the planned time of the test, the Testing Party must provide notification of the planned time of the test to the nearest second, and if it then delays the planned time of the test by more than 24 hours, it must provide notification of a new planned time to the nearest second. Further, following the test it must notify the Verifying Party of the actual time of the test to the nearest 0.1 second, referenced to UTC.

Paragraph 20 requires notification by the Testing Party of any change in the location of a test by more than one minute of latitude or longitude, or in the planned yield of a test from 50 kilotons or less to more than 50 kilotons. In the event of any such change the Testing Party must give the Verifying Party an opportunity to revise its decision regarding verification activities. Accordingly, after the required notice of any such change, the Verifying Party has 20 days to revise its earlier notification regarding its intent to carry out verification activities. It could, for example, decide to change from carrying out on-site inspection, or doing nothing, to carrying out hydrodynamic yield measurement, or vice versa.

In addition, paragraph 20 provides that if the Verifying Party, in its revised notification, has notified the Testing Party of its intention to use the hydrodynamic yield measurement method, the Testing Party is required to furnish the same information that it would have been required to furnish if the Verifying Party had initially decided to carry out the activities elected in its revised notification. Additionally paragraph 21 provides that if the Verifying Party has notified the Testing Party of its intention to use the hydrodynamic yield measurement method, the beginning of emplacement of sensing elements and cables may not start until at least 90 days after notification by the Testing Party of the change in location, unless the Parties otherwise agree. This obligation is independent of the obligation established by paragraph 9 of Section III.

Paragraphs 22, 23, and 24 deal with changes in the configuration of a test or an increase in the number of emplacement holes or explosive canisters in a test.

Paragraph 22 confirms the right of the Testing Party to change the configuration of a test without notice if the Verifying Party has elected not to carry out hydrodynamic yield measurements of that test. On the other hand, if the Verifying Party has initially elected to carry out hydrodynamic yield measurements of that test, paragraph 23 requires the Testing Party to notify the Verifying Party of any change in configuration or increase in number of emplacement holes or explosive canisters in the test. Within five days of such a change notice, the Verifying Party is required to indicate whether it will revise its initial decision and whether it deems that the change would either preclude or significantly limit the exercise of its verification rights. If it makes such a determination, the Coordinating Group is required to meet immediately and seek to revise the coordinated schedule to protect the rights of both Parties. If the Parties cannot agree on a revised coordinated schedule within 15 days of the Testing Party's notice of the change in configuration or number of holes or canisters, then the change notice will be treated as if it were the original notice of a new test so that the Verifying Party may submit a new notification regarding its intention to carry out verification activities, and the test may not be conducted for at least 180 days after the date of the Testing Party's notice of change.

Paragraph 24 provides similar rights and constraints for the situation in which the Verifying Party has elected to carry out on-site inspection. The rights and constraints, however, apply only when the Testing Party increases the number of explosive canisters or emplacement holes (the additional changes encompassed within paragraph 23, such as a change in test configuration, would not impact on-site inspection rights). As in paragraph 23, the Verifying Party has five days to respond to the change notice. If it determines that the change would significantly limit the exercise of its verification rights, it may so notify the Testing Party and force the Coordinating Group to consider a revision to the coordinated schedule. In the absence of agreement within 15 days following the Verifying Party's notice, the Testing Party's notice is treated as an initial notice of a test, and the test may not be conducted for at least 165 days thereafter.

Paragraph 25 permits the Verifying Party to request clarification of any point of furnished information within one year following the test. It also obligates the Testing Party to provide a clarification in response to any such request in the shortest possible time and in no event more than 30 days following receipt of the request.

SECTION V.

Section V sets forth the procedures, conditions, obligations, and rights of the Parties that apply if the Verifying Party elects to use the hydrodynamic yield measurement method.

Paragraph 1 defines the dimensions and locations of the zone in which the Verifying Party may carry out hydrodynamic yield measurements of the yield of a test. The parameters of the zone differ depending on whether a test is of "standard" or "non-standard" configuration, as described in paragraphs 2-3, and on whether a test is in a vertical hole or a horizontal hole (such as one excavated into the side of a mountain). The zone parameters for a test of standard configuration are also applicable to a test of non-standard configuration having a planned yield of 50 kilotons or less. If a test includes more than one explosion (whether it is of standard or non-standard configuration), there is a different hydrodynamic measurement zone for each explosive canister.

For a test of standard vertical configuration, the zone is cylindrical with a diameter of 25 meters and a length extending from a point 30 meters below the end of the emplacement hole upward for 130 meters above that point. The axis of the cylindrical zone is midway between the axis of the emplacement hole and the nearby dug or drilled satellite hole containing the cables of the Verifying Party that are used to carry out hydrodynamic yield measurements.

The zone for a test of standard horizontal configuration is cylindrical with a diameter of 25 meters and a length extending from a point 15 meters beyond the end of the emplacement hole (which in the case of a horizontal configuration is a tunnel) for a distance of 80 meters towards the entrance to the emplacement hole. The axis of the cylindrical zone, as in the case of a vertical configuration, is midway between the axes of the emplacement and satellite holes.

For a test of non-standard vertical configuration having a planned yield exceeding 50 kilotons, the zone is cylindrical with a diameter of 200 meters and a length extending from a point 30 meters below the end of the emplacement hole to a point 100 meters above the center of the explosive canister. The axis of the cylindrical zone in this case is the axis of the emplacement hole.

The zone for a test of non-standard horizontal configuration having a planned yield exceeding 50 kilotons is a cylinder with a diameter of 130 meters and a length extending from a point 15 meters beyond the end of the emplacement tunnel to a point 65 meters from the center of the explosive canister towards the entrance to the emplacement tunnel. Its axis is the same as the axis of the emplacement hole. If any test consists of more than one explosion, there will be one hydrodynamic measurement zone for each explosive canister.

Paragraph 2 describes the characteristics of a "standard" vertical test configuration. In order for a test to be considered as having a standard vertical configuration the emplacement hole must be vertical and cylindrical, and must satisfy certain diameter requirements. The bottom of the hole must be plugged with stemming material meeting specified density and thickness requirements. That plug must form the end of the emplacement hole for the deepest explosive canister in the test (like a test of non-standard configuration, a test of standard configuration may include more than one explosive canister). Each explosive canister must be within specified size limitations. Pipes and cableways connected to an explosive canister must pass through a choke section meeting specified diameter, thickness, location, and density requirements, and their areas cannot exceed specified limits.

Voids in or nearby the emplacement hole or a satellite hole, but outside an explosive canister, a choke section, diagnostic canisters or associated cables or pipes, having a volume exceeding a defined maximum limit, must be filled with stemming material meeting specified density requirements in order to ensure accurate hydrodynamic data. Finally, the distance between the emplacement hole and the satellite hole must be no more than the distance from the satellite hole to any other drilled hole or excavation within the hydrodynamic measurement zone.

Paragraph 3 provides that for a test to be considered of standard horizontal configuration, the emplacement hole or tunnel must be horizontal with specified maximum dimensions. The end of the tunnel must be unsupported native rock or be plugged with stemming material meeting the same requirements as are applicable to a test of standard vertical configuration. Paragraph 3 also establishes criteria for the length, size, and location of each explosive canister, specifications for pipes and cableways, choke sections, voids, and the minimum required distance between an associated satellite hole and any other tunnel or excavation.

As in the case of a test of standard vertical configuration, a test of standard horizontal configuration may include more than one explosive canister and more than one emplacement hole. Any test that does not have the characteristics described in either paragraph 2 or paragraph 3 is considered of non-standard configuation.

Paragraphs 4 and 5 establish the rights and procedures applicable to a test of standard configuration (whether vertical or horizontal) and an explosion having a planned yield of 50 kilotons or less (whether part of a test of standard or non-standard configuration). Paragraph 4(a) requires the Testing Party to drill or excavate a satellite hole meeting specified requirements. The Testing Party may prepare the satellite hole at any time, including before the arrival of Designated Personnel. For a test of horizontal configuration containing more than one explosive canister, the satellite hole may be a single hole or a series of separate consecutive segments associated with separate hydrodynamic measurement zones. The satellite hole must also be at least six meters from any other drilled or excavated cavity or hole.

Paragraph 4(b) provides that the Designated Personnel have the right to observe the plugging of the end of the emplacement hole and to retain a sample of the stemming material. Paragraph 4(c) provides that they have the right to survey and measure each satellite and each emplacement hole, under observation of Testing Party personnel and with their assistance if requested. Paragraph 4(d) gives Designated Personnel the right to install their equipment, under the observation of Testing Party personnel and with the latter's assistance if requested, and to operate that equipment. The location of recording and command and monitoring facilities of the Verifying Party, as well as the Testing Party's instrumentation facility, will be determined in the Coordinating Group. The Testing Party is required to prepare areas in accordance with agreed requirements for these facilities, plus cable supports and cableways exclusively for protection of the electrical cables of the Verifying Party that will transmit the data regarding yield of the explosion. The personnel of each Party have access to the electrical cables and their cableways only under observation of the other Party. Designated Personnel are guaranteed access to those cables at all times.

Paragraph 4(e) gives Designated Personnel the right to use their own power sources or to use power from the standard electrical network at the test site.

Paragraph 4(f) provides that the Verifying Party may install up to six sensing elements and cables and associated equipment in each satellite hole and that this equipment of the Verifying

Party shall be the only equipment permitted in a satellite hole. This paragraph also prescribes that it must be installed at least 30 meters below the end of a vertical emplacement hole or 15 meters beyond the end of a horizontal emplacement hole. Personnel of both Parties may measure the location of this equipment. Paragraph 4(g) gives Designated Personnel the right to conduct a final survey and measurement of each satellite hole after installation of sensing elements and cables.

Paragraph 4(h) requires the Testing Party, under observation of Designated Personnel, to fill specified voids and provide Designated Personnel with a sample of each stemming material used. It also establishes criteria for the stemming material.

Paragraph 4(i) establishes the right of Designated Personnel to observe stemming of each hydrodynamic measurement zone in the emplacement hole, and to receive a sample of the stemming material used.

By virtue of paragraphs 4(j) and 4(k), the Testing Party may case or line emplacement holes and, subject to agreement on specific details, satellite holes.

Paragraph 5 sets forth the rights and procedures applicable to the preparations for the use of the hydrodynamic method in tests and explosions covered by paragraph 4.

Paragraph 5(a) obligates Designated Personnel to provide the Testing Party with a description of their recording format and computer programs upon their arrival at the test site. The description must be in a form that will enable the Testing Party to read digital data in the event that digital recordings of hydrodynamic data will be made by Designated Personnel.

Paragraph 5(b) requires the Testing Party to provide Designated Personnel with the results of any available studies of rock extracted from holes in the area of the test, and of logging and geodetic measurements relevant to geology and geophysics of each hydrodynamic measurement zone.

Paragraph 5(c) gives Designated Personnel the right to conduct specified logging, surveys and measurements in the emplacement hole and associated satellite hole and measurements to determine the existence and depression of nearby voids, regardless of whether the emplacement hole is vertical or horizontal. Surveys are done in both holes, while logging is done in the hole chosen by the Testing Party. All logging data, geometrical measurements, and calibration data must be duplicated and a copy given to the Testing Party pursuant to subparagraph 5(d) before Designated Personnel leave the test site.

Designated Personnel also have the right, pursuant to paragraph 5(e), to receive, at their choice, core samples, rock fragments, or both, which shall be extracted at specified locations within the emplacement hole or satellite hole. These core samples or rock fragments are necessary if accurate hydrodynamic yield measurements are to be obtained. The Testing Party has the right to select the hole from which they will be extracted. The amount of rock extracted is also prescribed, as is the diameter and depth of drilled holes in the case of horizontal emplacement holes.

Paragraph 5(f) provides that the Testing Party decide which Party will extract the core samples or rock fragments. If the Testing Party decides not to do so, or does so but fails to meet the specific requirements, paragraph 5(g) specifically guarantees Designated Personnel the right to do so, using their own equipment. In either case the other Party's personnel may observe the extraction. If the Testing Party has cased a total of 20 meters or more of either or both the emplacement hole and the satellite hole in the hydrodynamic measurement zone, paragraph 5(h) gives Designated Personnel the right to obtain logging measurements and core samples or rock fragments from an uncased hole that can provide information equivalent to that which they would have received in accordance with paragraphs 5(c), (e), (f), and (g). Paragraph 5(h) also specifies the size and location of the new, uncased hole that the Testing

Party must drill if both emplacement and satellite holes are cased. Designated Personnel have the right to retain the core samples and rock fragments extracted as prescribed above, in accordance with paragraph 5(i). Paragraph 5(j) provides that the Testing Party determines when logging, surveying, measuring, and extracting takes place, and that the right of Designated Personnel to perform those activities includes a period up to 25 days. The Testing Party is prohibited from emplacing any explosive until all those activities have been completed.

Paragraphs 6 and 7 describe procedures relating to use of the hydrodynamic yield measurement method with respect to explosions that have a planned yield exceeding 50 kilotons and that do not fit the criteria for tests of standard vertical or standard horizontal configuration set forth in paragraphs 2 or 3. These provisions are comparable to those set forth in paragraphs 4 and 5 with respect to tests of standard configuration. The principal difference is that paragraph 6(a) entitles the Verifying Party to three satellite holes if it so chooses rather than one as in the case of a test of standard configuration and gives it the right to specify the location of the second and third satellite holes, within certain parameters. In accordance with paragraph 6(a)(ii), Designated Personnel have the right to specify these locations without the restrictions imposed by paragraph 4(a) in the case of a test of standard configuration. They have the right to receive core samples or rock fragments and conduct logging from the emplacement hole and all satellite holes. Moreover, they have the right pursuant to paragraph 6(e) to install up to six sensing elements and cables in each satellite hole as well as up to six transducers with no more than 14 cables for information transmission and power supply. However, there cannot be more than 20 cables in each satellite hole. In addition, paragraph 7(c)(v) gives the Verifying Party the right to conduct magnetic surveys to collect information necessary for the installation and positioning of transducers in vertical satellite holes and drilled horizontal satellite holes. Finally, in the case of tests of non-standard configuration having a planned yield exceeding 50 kilotons, paragraph 7(h) provides certain additional requirements regarding the provision of one or more uncased holes, if the Testing Party has cased specified portions of any vertical emplacement or satellite hole.

Paragraph 8 requires the Testing Party to provide a "reference test," meeting stated criteria, if the Verifying Party notifies the Testing Party of its intention to use the hydrodynamic yield measurement method with respect to a test of non-standard configuration having a planned yield exceeding 50 kilotons, and if the Verifying Party indicates that it requires a reference test. There are five criteria for a reference test. First, it must have a planned yield exceeding 50 kilotons. Second, it must be of standard configuration (i.e., have the characteristics described in paragraph 2 or 3). Third, it must have a single explosive canister. Fourth, it must meet specified spacing and location requirements designed to ensure that the seismic measurements derived from the reference test and the associated test of non-standard configuration can be meaningfully compared. Finally, it must have been conducted prior to, or be conducted within 12 months following, the associated test of non-standard configuration.

Paragraph 9 deals with activities of Designated Personnel at the test site. Paragraphs 9(a) and 9(b) guarantee Designated Personnel access to the test locations along agreed routes and access to their equipment from the time of delivery at the test site until transfer to Testing Party personnel for inspection after it has been used, in accordance with Section VIII, paragraph (7)(i).

With respect to a test of standard configuration, or a test of non-standard configuration having a planned yield of 50 kilotons or less, paragraph 9(c) gives Designated Personnel the right to measure the external dimensions, and to inspect visually the external structure, of each explosive canister and choke section, to confirm by direct measurement that the choke section conforms to specifications, and to observe the emplacement and stemming process from the time the explosive canister is lowered into a vertical emplacement hole, or after the canister has been emplaced in a horizontal emplacement hole. Paragraph 9(d) provides the same rights with respect to explosions over 50 kilotons having characteristics different from those associated with a test of standard configuration, and includes procedures for a test in a cavity, including the right to measure the dimensions of the cavity.

Paragraphs 9(e) and 9(f) give Designated Personnel the right, with respect to tests of standard or non-standard configuration having a vertical emplacement hole, to unobstructed visual observation of the entrances to emplacement and satellite holes from completion of stemming of satellite holes and the hydrodynamic measurement zone of the emplacement hole, until departure of all personnel from the site prior to the test.

In the case of a horizontal emplacement hole, whether the test is of standard or non-standard configuration, these paragraphs give Designated Personnel the right to unobstructed visual observation of their sensing elements and cables until stemming of the satellite hole in which they are placed, and of connecting electrical cables until they are installed in protective cableways. Designated Personnel also have the right to observe the emplacement hole entrance from the time of stemming of satellite holes and the hydrodynamic zone of the emplacement hole until departure of all personnel prior to the test.

Paragraphs 9(g) through 9(m) give Designated Personnel the right to monitor and operate their equipment used to carry out hydrodynamic yield measurements.

Paragraph 9(g) gives Designated Personnel the right to monitor, by electrical means, the integrity and performance of the Verifying Party's sensors, transducers, and connecting cables; recording facility; trigger conditioners and associated terminal conversion devices; command and monitoring facility; and all above-ground electrical and fiber optic cables. This paragraph also gives Designated Personnel the right to observe continuously all their above-ground cables and the cableways in which they are installed from the time emplacement of sensors, transducers, and cables in a satellite hole begins until all personnel are withdrawn from the immediate area of the test prior to the test. Following this withdrawal of all personnel and until reentry after the test, Designated Personnel can observe the surface area containing their hydrodynamic measuring equipment by means of closed-circuit television. (Paragraph 1(j) of Section VIII provides that the Verifying Party may supply the closed-circuit television equipment, if the Testing Party chooses not to do so.)

Paragraph 9(h) gives Designated Personnel a similar right to monitor the integrity and performance of their equipment from within their command and monitoring facility, from the time it is put into use until hydrodynamic data have been acquired, recorded, authenticated, and copied; that is, the command and monitoring facility remains occupied by Designated Personnel during the test. (Paragraph 11(d) of this Section also gives the Testing Party the right to have two of its personnel present in the Verifying Party's command and monitoring facility for a specified period around the time of the test.)

Paragraphs 9(i) and (j) give Designated Personnel the rights to transmit command signals from their command and monitoring facility required for operation of their hydrodynamic recording facility or facilities, and to use the telemetry system of the Testing Party, if such a system is used at the test site, to carry monitoring, control or command, and data signals. Alternatively, Designated Personnel may choose to use their own above-ground electrical and fiber optic cables for these purposes.

Paragraph 9(k) provides that Designated Personnel have the right to carry out hydrodynamic yield measurements and record the hydrodynamic data.

Paragraphs 9(l) and (m) give Designated Personnel the right to transmit hydrodynamic yield measurement data from each recording facility to their command and monitoring facility and, following the test, to reenter the area containing each recording facility at the same time that personnel of the Testing Party reenter the area. Then, following agreed procedures, Designated Personnel, accompanied by Testing Party personnel, have the right to reenter their recording facilities to retrieve and verify the authenticity of their recorded data, and assess the performance of their equipment during data recording and transmission.

Paragraph 10 deals with notifications, actions, and responsibilities of the Parties during the carrying out of hydrodynamic yield measurements. Paragraph 10(a) requires the Testing Party to notify the Designated Personnel Team Leader, in writing, of the beginning of the period of readiness and the planned time of the test. Paragraph 10(b) requires the Testing Party to produce the event readiness signal, beginning at a time specified by the Verifying Party within an interval of seven to 15 minutes prior to the planned time of the test. The Parties will agree on the parameters of this signal, and how it will be transmitted and received.

Paragraph 10(c) gives Designated Personnel the right to generate a timing reference signal using trigger conditioner devices approved by the Parties. The timing reference signal may be generated, transmitted, and used by Designated Personnel without intervention by Testing Party personnel. Paragraph 10(d) gives Designated Personnel the right to install these trigger conditioner devices, under observation of personnel of the Testing Party, and test and monitor their operation. Testing Party personnel have the right to monitor their operation, and to monitor and record the actual reference signal. Personnel of neither Party may have physical access to the devices except under observation of personnel of the other Party.

Paragraph 10(e) requires the Testing Party to provide, at the Verifying Party's request, an electrical pulse corresponding to the moment of explosion (zero-time) for each explosion of the test. The parameters of this signal, and the means of transmitting and receiving it, shall be agreed upon by the Parties. Paragraph 10(f) gives the Testing Party exclusive control over the generation of the event readiness and zero-time signals.

Paragraph 10(g) requires Designated Personnel, under Testing Party observation, to install an anti-intrusiveness device, supplied by the Testing Party from those approved by both Parties, in each of their cables from each satellite hole to their hydrodynamic recording facility, that shall interrupt the transmission of any signal unrelated to the hydrodynamic yield measurements, while not interfering with the Verifying Party's recording of hydrodynamic yield measurement data. From the time these devices are installed until the final dry run, personnel of either Party have the right to test and monitor their operation and to have physical access to them only under observation of personnel of the other Party. Sole control over triggering the devices is transferred to the Testing Party when all personnel depart the test location prior to the test.

Paragraphs 10(h), (i), and (j) deal with grounding the equipment of the Verifying Party, to be done by Designated Personnel under observation of Testing Party personnel. The grounding system shall be under joint control of both Parties.

Paragraph 10(k) gives Designated Personnel the right to install isolation transformers at the input of each anti-intrusiveness or trigger conditioner device. From the time of installation until the test, personnel of either Party may have physical access to them only under observation of personnel of the other Party.

Paragraph 10(l) gives the Testing Party the right to install and operate, under its exclusive control, a facility containing instrumentation for monitoring and recording various signals, controlling and monitoring the operation of the anti-intrusiveness devices, and for the transmission of trigger and control signals.

Paragraph 10(m) requires Designated Personnel, upon their arrival at the test site, to provide the Testing Party with a block diagram of the equipment configuration for hydrodynamic measurements indicating any changes from that approved by the Testing Party as part of the equipment familiarization inspection provided for in Section VIII. Prior to the final dry run, Designated Personnel must notify the Testing Party, in writing, of any additional changes in this block diagram. The Testing Party has the right to disapprove changes, but must give specific reasons, in writing, for disapproval. If the change is disapproved, Designated Personnel must reconfigure their equipment so as to conform to the original block diagram approved in conjunction with the equipment familiarization process, unless the Testing Party otherwise agrees.

Paragraph 11 deals with access to the facilities of the Verifying Party. Personnel of the Testing Party are given the right to observe use of equipment by Designated Personnel and to be present in the facilities of the Verifying Party for certain purposes requiring the presence of both Parties under specified restrictions. At all other times, personnel of the Testing Party may enter Verifying Party facilities only at the express invitation of the Designated Personnel Team Leader and when accompanied by him or his designated representative.

Paragraphs 12 and 13 deal with rights of Designated Personnel to obtain photographs of verification activities and to require that an operation that would result in the photographed object being permanently lost to view be held up until adequate photographs are obtained. Limits on the cumulative delay introduced by this right are also specified. Paragraph 13 lists the objects and activities that may be photographed.

Paragraph 14 defines the procedures for recovery of hydrodynamic data, and for transfer of a copy of such data to personnel of the Testing Party.

Paragraph 15 provides that Designated Personnel may not be present in areas from which personnel of the Testing Party have been withdrawn in connection with the test, but have the right to accompany such personnel when they reenter these areas after the test. Paragraph 16 affirms that all hydrodynamic yield measurement activities shall be carried out in accordance with the coordinated schedule.

Paragraph 17 specifies the maximum number of Designated Personnel permitted at the test site for a test of standard configuration, a test of standard configuration conducted in more than one emplacement hole, or a test of non-standard configuration. At least two of the Designated Personnel must be fluent in the language of the Testing Party.

SECTION VI.

Section VI sets forth the procedures, conditions, and rights applicable when the Verifying Party elects to use the seismic yield measurement method.

Paragraph 1 gives the Verifying Party the right to carry out seismic measurements at three Designated Seismic Stations in the territory of the Testing Party. To qualify as a Designated Seismic Station a facility must be located within the continental territory of the Testing Party and must meet specified technical requirements. It must also be chosen from existing stations that provide earthquake and other seismic data, including data on tests, to archives in the territory of the Testing Party that are accessible to the Verifying Party. In paragraphs 2 and 3 the U.S. and the U.S.S.R., respectively, designate three such stations: Tulsa, Oklahoma; Black Hills, South Dakota; and Newport, Washington in the United States; and Arti, Novosibirsk, and Obninsk in the Soviet Union.

Paragraph 4 requires each Party to provide the other with certain information on each of its Designated Seismic Stations upon entry into force of the Treaty. The information includes a site diagram, elevation above sea level and the types of rock on which it is located.

Paragraph 5 provides that a Party may replace one or more of its Designated Seismic Stations, provided that the new station meets the criteria of paragraph 1, and the same information as provided for the original stations is provided.

If the Verifying Party has notified the Testing Party of its intent to use the seismic yield measurement method and carry out verification activities at a particular station, the Testing Party may not substitute a new station for that station less than 90 days prior to the test. Finally, seismic data from the new station must be available in the archives of the Testing Party, accessible to the Verifying Party, covering the period from entry into force of the Treaty (or four years if the substitution is made within four years following entry into force).

Paragraph 6 provides that the Verifying Party may request replacement of any station that does not meet the criteria of paragraph 1. Such a request must set forth the reasons why the Verifying Party believes the existing station does not meet those criteria and must be transmitted to the Testing Party through the Nuclear Risk Reduction Centers. Disputes are to be referred to the Bilateral Consultative Commission. Paragraph 7 requires the Testing Party to bear the costs of replacing a Designated Seismic Station in its territory.

Paragraph 8 requires the Testing Party to provide the Verifying Party at each Designated Seismic Station specified facilities and equipment, meeting agreed technical specifications, related to the installation and operations of seismic verification equipment. The applicable technical specifications are set forth in letters exchanged by the Heads of Delegation during the negotiation of the Protocol, copies of which are attached to this analysis.

Paragraph 9 specifies the rights and obligations of the Testing Party at the Designated Seismic Stations. Its personnel have the right to observe the installation and calibration of equipment by Designated Personnel, but otherwise may not be present except at the invitation of the Designated Personnel Team Leader and when accompanied by a representative of the Verifying Party. The Testing Party is prohibited from interfering with the installation, calibration, adjustment, and operation of the Verifying Party's equipment, and is also obligated to provide agreed-upon assistance and logistical support.

Paragraph 10 grants to Designated Personnel a series of specific rights that cover the activities required to carry out seismic measurements. These include the right to:

(a) confirm that agreed technical specifications for installation and operation of equipment have been met during the time periods specified in the coordinated schedule;

(b) have access to their equipment from the time of arrival of Designated Personnel until their departure from the Designated Seismic Station;

(c) install, calibrate, adjust, and continuously operate their equipment;

(d) record seismic signals and universal time signals continuously from the time their equipment is installed until two hours after the test, as well as process data to monitor the quality of recorded data and retrieve and copy all recorded data;

(e) use their own electrical sources to supply electrical power to their equipment;

(f) install and operate tamper-detection equipment and observe the cableway and the exterior of the facility in which the seismic sensors are installed;

(g) assess the integrity and performance of their equipment and confirm that there has been no interference with seismic measurements and the recording of such measurements; and

(h) lock and seal their facilities at the station.

Paragraph 11 requires that the Testing Party notify the Designated Personnel Team Leader at each Designated Seismic Station of the beginning of the period of event readiness and the planned time of the test, to the nearest one second, in accordance with the count-down provisions set forth in Section IV. The notice must be in writing and referenced to UTC.

Paragraph 12 requires Designated Personnel upon arrival at the station to provide the Testing Party personnel with a description of the recording format and computer program to read digital data if digital recordings are made. This paragraph also requires Designated Personnel, prior to their departure from the station, to provide the Testing Party with a copy of recorded data, a paper graph showing the test data from one minute before until 30 minutes after the test, and the results of calibration of their equipment. They are also obligated to prepare their equipment for inspection and for storage or shipment.

Paragraph 13 gives Designated Personnel the right to acquire, or, if the Testing Party so agrees, take photographs of operations and activities related to seismic verification under conditions similar to those applicable in the case of use of the hydrodynamic yield measurement method.

Paragraph 14 requires all activities of Designated Personnel at Designated Seismic Stations to be carried out in accordance with the coordinated schedule. In addition, Designated Personnel must arrive at least 10 days before the test and leave within two days after the test. If the test is postponed by more than 10 days, they may leave (or be required by the Testing Party to leave) the Designated Seismic Stations. In that case they have the right to seal their equipment, which can then be unsealed only by them, under observation of personnel of the Testing Party. They have the right to reoccupy the station at least 72 hours before the test.

Paragraph 16 restricts the number of Designated Personnel at each station to no more than five. At least one of the Designated Personnel at each station must be fluent in the language of the Testing Party.

SECTION VII.

Section VII sets forth the procedures, conditions, and rights applicable when the Verifying Party carries out on-site inspection.

Paragraph 1(a) requires the Testing Party to provide Designated Personnel with the results of any available studies of rock extracted from holes in the area of the test, and of logging and surveying measurements relevant to geology and geophysics of the emplacement medium.

Paragraph 1(b) gives Designated Personnel the right to conduct specified logging and measurements regarding the emplacement hole or nearby cavities, whether the emplacement hole is vertical or horizontal. All logging data and geometrical measurement data must be duplicated and a copy given to the Testing Party before the Designated Personnel leave the test site, pursuant to paragraph 1(c).

Paragraph 1(d) gives Designated Personnel the right to receive core samples or rock fragments extracted at specified locations from the emplacement hole, in accordance with procedures that give Designated Personnel the right to choose between core samples and rock fragments and to specify the locations of extraction, subject to certain limitations. The amount of rock extracted is also prescribed as is the diameter of the small drilled holes from which the rock is extracted in the case of horizontal emplacement holes. Paragraph 1(e) ensures that the Testing Party makes the decisions as to who actually extracts the core samples or rock fragments. If the Testing Party decides not to do so, or if it does so but the core samples or rock fragments fail to meet the required specifications, paragraph 1(f) guarantees Designated Personnel the right to extract this material using their own equipment. If the Testing Party has cased more than a total of 20 meters of a specified portion of the emplacement hole, paragraph 1(g) guarantees the Verifying Party the right to obtain core samples or rock fragments from an uncased hole that can provide information equivalent to that which the Verifying Party would have received under paragraphs 1(b), 1(d), 1(e), and 1(f). Paragraph 1(g) also specifies the size and location of the uncased hole if a new hole must be drilled. Designated Personnel have the right to retain the core samples and rock fragments extracted as prescribed above, in accordance with paragraph 1(h).

Paragraphs 2(a), (b), and (c) give Designated Personnel the right to observe the emplacement of each explosive canister in a vertical emplacement hole, to measure the depth or location of emplacement in a vertical or horizontal emplacement hole, and to observe the stemming process and confirm that specified requirements have been met. Paragraphs 2(d) through (g) guarantee Designated Personnel access to the test location and to their equipment. Paragraphs 2(f) and 2(g) also specifically provide Designated Personnel the right to conduct a visual inspection of a defined area at the test location.

Paragraphs 3 and 4 give Designated Personnel the right to obtain photographs under the same conditions as those applicable to the use of the hydrodynamic yield measurement method.

Paragraph 5 provides that all on-site inspection activities must be carried out in accordance with the coordinated schedule. However, unless otherwise agreed, the time for logging and coring by Designated Personnel may not exceed 15 days and such activities must be completed at least one day before the beginning of emplacement of explosives. Designated Personnel who only carry out paragraph 1 activities must leave upon completion of those activities, while those who carry out paragraph 2 activities may remain at the test site if required by the coordinated schedule. Designated Personnel who will carry out paragraph 2 activities must arrive at the test site at the time specified in the coordinated schedule, which must be at least three days prior to the date set by the Testing Party for initiating these activities.

Paragraph 6 limits the number of Designated Personnel conducting paragraph 1 activities at any given time to 23. Those carrying out activities described in paragraphs 2(a), 2(b), and 2(c) may not exceed five at any given time. At least one of the Designated Personnel must be fluent in the language of the Testing Party.

SECTION VIII.

Section VIII specifies the equipment that Designated Personnel have the right to import, install, and use in connection with verification activities, and establishes procedures and conditions applicable thereto.

Paragraph 1 establishes the basic rights to import, install, and use equipment more specifically described in subsequent paragraphs for each of three verification methods, as well as common equipment that may be imported, installed, and used in connection with any of the three verification methods. The latter category includes: maintenance and support equipment and spare parts for the other equipment more specifically provided for; certain electrical equipment; locks, seals and sealing equipment; medical and health physics equipment and supplies, protective gear, and recreational items; and office equipment including personal computers and copying and facsimile machines. This paragraph also covers three categories of equipment which the Verifying Party may supply, but only if the Testing Party chooses not to provide it. These three categories are: (1) photographic equipment; (2) closed-circuit television equipment to enable Designated Personnel to observe specified test site operations; and (3) satellite communications equipment to enable Designated Personnel to reach their home country telephone network by satellite from the test site in the territory of the Testing Party.

Since the Verifying Party may be unable to bring all the items that will be required for every verification activity, paragraph 2 contemplates that the Parties will agree in the Coordinating Group on additional items to be supplied by the Testing Party. This paragraph requires the Parties to agree within 15 days on such additional items as temporary structures, materials, and supplies, that the Verifying Party requests. The paragraph requires the Testing Party to provide Designated Personnel with the agreed items, with descriptions and operating instructions, in accordance with the coordinated schedule. The obligation contained in this paragraph on the part of both Parties to agree on additional items assumes a degree of cooperation in the Coordinating Group. Disputes over particular additional items would be resolved in the Bilateral Consultative Commission.

Paragraphs 3, 4, and 5 specify particular types of equipment for hydrodynamic yield measurement, seismic measurements and on-site inspection, respectively. The lists of equipment are not intended to be exhaustive but represent the types of equipment that will be used for each applicable verification activity. Paragraph 6 sets forth the procedures for initial Testing Party familiarization and approval of equipment to be used in connection with any of the three verification methods. Paragraphs 7, 8, and 9 specify the procedures for delivery, inspection, sealing, shipment, and testing of equipment to be used in connection with hydrodynamic yield measurements, seismic measurements or on-site inspection, respectively.

The equipment listed in paragraph 3 is that related to hydrodynamic yield measurements. It includes: sensing elements, cables and transducers; electrical cables; recording facilities and equipment; the command and monitoring facility; trigger conditioner devices; grounding cables; measuring and calibration instrumentation; and logging and other geological equipment. The categories are elaborated with considerable specificity to demonstrate the range and types of equipment that Designated Personnel may bring with them.

Paragraph 4 lists equipment for use in seismic measurement. It includes: specified seismic sensors and signal processing equipment; data recording equipment; equipment for connecting, controlling and calibrating seismic equipment; data processing equipment; and equipment for assessing the validity of recorded data. As in paragraphs 3 and 5 the list is not intended to be exclusive.

Paragraph 5 lists types of equipment associated with on-site inspection. This category of equipment includes, but is not limited to: logging equipment; associated calibration, monitoring and data processing equipment; equipment for extracting core samples and rock fragments; geologists' field tools and kits; and data recording equipment.

Paragraph 6 establishes a basic right of the Testing Party to an initial familiarization inspection of all the equipment that the Verifying Party will use to carry out verification activities. The familiarization process is initiated by the Verifying Party. At least seven days before delivery of equipment to the point of entry for this initial familiarization, the Verifying Party must provide a complete inventory, including instructions for installing and operating the equipment and specified technical information, including block diagrams of the system and its components. It must also indicate which equipment used for carrying out hydrodynamic yield measurements will be removed from its recording facilities and command facility at the test site shortly before the test because it could record sensitive information during the test. Within 45 days following receipt, the Testing Party must either approve the equipment, in writing, or specify the characteristics of any component that it deems inconsistent with its non-intrusiveness, containment, safety or security requirements. Equipment that is unacceptable for those reasons may be modified and resubmitted for approval. Only equipment that has been approved may be used by Designated Personnel. Within 50 days following delivery, the Testing Party must return all the equipment to the Verifying Party at the point of entry in the same condition as that in which it was received.

Paragraph 7 specifies the procedures applicable to equipment to be used to carry out hydrodynamic yield measurements. At least 60 days prior to the beginning of emplacement of cables or emplacement of explosives, whichever occurs first, the Verifying Party must deliver one or two sealed sets of a specified portion of its equipment. Paragraph 7(b) provides that at least 45 days before the beginning of emplacement of sensing elements and cables, the Verifying Party must similarly deliver the rest of the equipment (except for stored equipment). It has the option of delivering either one or two sets of most equipment, but it must deliver two sets of specified sensing elements and cables, electrical cables, trigger conditioners, and command and recording facilities including associated equipment. Paragraph 7(c) requires that all this equipment must be the same as the equipment previously supplied for familiarization and approved by the Testing Party. Paragraph 7(d) requires that at least seven days before delivery, the Verifying Party must provide a complete inventory, specifying which equipment is to be removed from its command and recording facilities shortly before the test.

Paragraph 7(e) deals with the case in which the Verifying Party provides two sets of identical equipment. In this case the Testing Party may select one set for use by Designated Personnel and may inspect the other set for 30 days without the presence of Designated Personnel, with the exception of the specified sensing and electrical cables. Special procedures are established for the inspection of cables since containment standards require that no cables may be placed in a satellite hole unless they meet the containment requirements of the Testing Party. The components of these two cable sets must be combined and randomly rearranged into two new sets which are then divided in the above-described manner. The Testing Party may affix its seals to the set of equipment to be used by Designated Personnel (which must already have been sealed by the Verifying Party) and to one set of the randomly rearranged cables, and may remove the seals of the Verifying Party from the set of equipment to be inspected and the other set of cables randomly rearranged. For continuously gas-blocked cables, Designated Personnel may cut a three-meter segment from each end of the cable.

Some cables are designed to prevent radioactive gas from traveling along the cable, otherwise individual gas blocking devices must be installed. For continuously gas blocked cables, Designated Personnel have the right to cut representative segments of cable and subject them to pressure tests. A different set of procedures is established for cables with individual gas-blocking devices installed: Designated Personnel cut cables at three meters on either side of each gas-blocking device, and the set of devices and connected cable segments is subsequently pressure-tested. The Testing Party is entitled to remove up to 150 meters of cable from the set chosen for inspection, in a number of segments not to exceed two times the number of cables in the set.

Paragraph 7(e) also requires the Testing Party to protect the set of equipment that is to be used by Designated Personnel, and all sealed containers, to store this equipment under agreed conditions, and to ship it undamaged to the test site. The Testing Party is required to consult with Designated Personnel at least 48 hours before shipment, and Designated Personnel have the right to verify the integrity of seals, to observe the equipment and to accompany the shipment. The equipment must arrive at the test site within prescribed times determined by reference to the planned beginning of emplacement of explosives or emplacement of cables. Precise procedures for the removal of seals are set forth, including specific provisions regarding the removal of seals on prescribed cables and trigger conditioners, pressure testing of cables, including cables with gas-blocking devices, and non-destructive inspection of cables. The principal purpose of these procedures is to ensure that the Testing Party's containment requirements are met. Within one day following completion of this testing and inspection, the Verifying Party may require the Testing Party to provide cables that meet Testing Party containment requirements. Those cables must be provided within two days following the request and at least seven days before the planned date of beginning of emplacement of cables.

If the Verifying Party provides only one set of equipment, paragraph 7(f) sets out a similar set of procedures, including the right of the Testing Party to inspect the equipment for 30 days without the presence of Designated Personnel, and the obligation of the Testing Party to ship the equipment undamaged to the test site prior to prescribed deadlines. Within five days of delivery of equipment to Designated Personnel the Designated Personnel Team Leader must either certify that the equipment is in working condition or prepare a damage report. The consequences of damage would be dealt with in the Coordinating Group or, if agreement cannot be reached there, in the Bilateral Consultative Commission.

Paragraph 7(g) requires the Testing Party, after its inspection of equipment, to inform the Verifying Party if any of the equipment does not conform to that previously approved by the Testing Party during familiarization. In such a case the Testing Party must specify the non-conforming characteristics. Non-conforming equipment must be removed and stored under prescribed conditions. Approved equipment is handed over to the exclusive control of Designated Personnel.

Paragraph 7(h) provides that Designated Personnel shall remove from the command facility and each recording facility specified items of equipment, under the observation of personnel of the Testing Party, immediately prior to the final dry run. All remaining maintenance and support equipment and spare parts are required to be removed from these facilities by Designated Personnel upon departure of personnel immediately prior to the test, unless otherwise agreed.

After the equipment has been used, the Testing Party has the right to inspect the equipment for a period of 30 days without the presence of Designated Personnel, at times and in accordance with the specific provisions of paragraph 7(i).

Paragraph 7(j) confers on the Verifying Party the right to store equipment in the territory of the Testing Party at a location chosen by the Testing Party and under its protection.

Paragraph 7(k) provides specific procedures that the Verifying Party may invoke in connection with the preparation of inventories and packing, shipment, and storage of equipment.

Paragraph 7(l) provides for delivery and use of stored equipment for subsequent tests.

Paragraphs 8 and 9 provide comparable procedures, rights, and obligations covering equipment to be used for seismic measurement and on-site inspection, respectively.

SECTION IX.

Section IX establishes the procedures for designating the personnel who will participate in verification activities, ensures their expeditious entry and functioning in the territory of the Testing Party, and accords them the equivalent of diplomatic status while they are in the territory of the Testing Party.

Paragraph 1 provides that not later than 10 days following entry into force of the Treaty, each Party is required to provide the other with a list of proposed Designated Personnel, not exceeding 300 individuals, and a list of proposed Transport Personnel, not exceeding 200 individuals. The lists must contain the name, date of birth, and sex of each individual.

Paragraph 2 provides that the Party reviewing a list must accept or reject a proposed individual within 20 days. Individuals who are rejected must be deleted from the list. Following submission of the original lists, pursuant to paragraph 3, a Party may substitute up to 100 persons per year on its list of Designated Personnel (in addition to substitutions because of permanent physical incapacity, death, or ejection from the country), and an unlimited number on its list of Transport Personnel. All substitutions are subject to the same acceptance procedure as original appointees.

Paragraph 4 provides that following receipt of the original lists each Party must prepare for the issuance of visas and whatever other documents may be required for each individual on each list to carry out his or her functions. Paragraph 4 requires the Testing Party to perform whatever preparatory work may be required so that it will be in a position to issue and deliver multiple-entry visas and any other required documents for Designated Personnel within 15 days of notification that an individual is coming to carry out verification activities for a specific test, as specified in paragraph 2 of Section X.

Paragraph 5 establishes the grounds and procedures for finding an individual unacceptable for continued inclusion on the list of Designated Personnel or Transport Personnel.

Paragraph 6 guarantees the right of Designated Personnel, with their personal baggage and Verifying Party equipment, to enter the Testing Party's territory at the point of entry, to remain in that territory, and to exit through the point of entry.

Paragraph 7 specifies the privileges and immunities accorded Designated Personnel and Transport Personnel while they are in the territory of the Testing Party and, with respect to official acts, thereafter. This paragraph provides the equivalent of diplomatic privileges and immunities for Designated Personnel and Transport Personnel, their living and working quarters, their archives, documents, papers and correspondence, as well as the aircraft and transport vehicles of the Verifying Party. Immunity may be waived by the Verifying Party but only if the waiver is express.

Paragraphs 8 and 9 specify that Designated Personnel and Transport Personnel may not engage in any professional or commercial activity for personal profit in the territory of the Testing Party. Without prejudice to their privileges and immunities, they must respect the laws and regulations of the Testing Party, and may not interfere in its internal affairs.

Paragraph 10 provides that if the Testing Party considers that an individual has abused his or her privileges or immunities, consultations shall be held to determine the facts and to prevent a repetition of such an abuse if it occurred.

SECTION X.

Section X establishes the obligations and procedures relating to the entry, transport, provision of food, lodging, and other services for Designated and Transport Personnel. Paragraph 1 establishes a general obligation on the part of the Testing Party to ensure access and to provide any assistance necessary to enable Designated Personnel to carry out verification activities. In addition, this paragraph specifically guarantees the right of Designated Personnel to be present at the test site and Designated Seismic Stations at whatever times and for whatever periods as may be required to conduct the permitted verification activities. Those times and periods must be specified in the coordinated schedule developed and agreed upon in the Coordinating Group established for the particular test.

Paragraph 2 requires the Verifying Party to provide the Testing Party with specific information at least 20 days before the planned arrival of its Designated Personnel for verification activities. This information includes the names of personnel, including the names of Team Leaders and Designated Personnel who will escort equipment; the point of entry; the scheduled date and estimated time of arrival; and the mode of transportation to be used. The Verifying Party must also submit the passports and required documentation, such as visa applications and photographs, of those Designated Personnel. The Testing Party is then required to return these passports, with visas and any other required documents, within 15 days of receipt.

Paragraph 3 requires the Verifying Party to inform the Testing Party, at least 20 days prior to their planned date of arrival, how many Transport Personnel will arrive at the point of entry and to provide, at least three days before the planned date of arrival, a list of names of Transport Personnel, as well as their passports and required documentation. The Testing Party is then required to return these passports, with visas and any other necessary documentation, no later than one day before their planned arrival.

Paragraph 4 provides that the number of Designated Personnel at a test site or Designated Seismic Station shall be governed by Sections V, VI, and VII. This paragraph also provides that Designated Personnel may not be replaced unless they have been at the test site for at least six consecutive weeks (except in cases of injury, illness or family emergency). They are required to leave the test site or Designated Seismic Stations upon completion of their particular activities as specified in the coordinated schedule.

If the Verifying Party decides to use an aircraft other than a commercial aircraft, paragraph 5 requires that the aircraft proceed along agreed upon airways and under a flight plan filed in accordance with the procedures established by the International Civil Aviation Organization. The Testing Party is required to provide parking and security protection at its expense and fuel and servicing at the expense of the Verifying Party.

Paragraph 6 obligates the Testing Party to do what is necessary to ensure that all necessary approvals and clearances are obtained so that Designated Personnel, their baggage and equipment of the Verifying Party may arrive at the point of entry by the scheduled arrival date and time, while paragraph 7 obligates the Testing Party to assist with customs clearances and to provide transportation to the test site or Designated Seismic Stations so as to enable those personnel to exercise their rights and carry out their functions within the times provided for in the Protocol and the coordinated schedule.

Paragraph 8 gives the Testing Party the right to escort Designated Personnel and Transport Personnel while paragraph 9 establishes that except as otherwise provided in the Protocol, the Designated Personnel and Transport Personnel may travel in the territory of the Testing Party only as authorized by the Testing Party.

Paragraph 10 obligates the Testing Party to provide food, living and working facilities, transportation, and medical services for personnel of the Verifying Party and secure storage places for equipment. If the Verifying Party desires to provide its own food, the Testing Party is obligated to ensure its arrival at the appropriate locations and the use by Designated Personnel of a complete kitchen.

Paragraph 11 deals with medical care for Designated Personnel. It gives the Verifying Party the right to bring a medical specialist, with medications and instruments, and additional portable medical equipment agreed upon by the Parties. That specialist has the right to consult on the recommended treatment of any sick or injured Designated Personnel in a medical facility of the Testing Party, to monitor that treatment, and to order evacuation either to an agreed medical facility in the territory of the Testing Party or to the point of entry. In addition, Designated Personnel are guaranteed the right to refuse any medical treatment prescribed by medical personnel of the Testing Party. That refusal must be express, and the Testing Party is thereupon relieved of any responsibility for the consequences of that refusal.

Paragraph 12 guarantees the Designated Personnel Team Leader or his designated representative access to an international telephone network and to telephone communications between their working and living facilities and the Verifying Party's embassy. In addition, paragraph 13 gives the Designated Personnel Team Leader or his designated representative access to satellite communications via INMARSAT or an equivalent system between the test site and the telephone communications system of the Verifying Party. If the Testing Party does not provide equipment for such access, the Verifying Party may bring its own equipment for that purpose, but installation and alignment must be done jointly, specified equipment must be locked and sealed, and neither Party may have access to that specified equipment except under the observation of the other Party. However, Designated Personnel are entitled to exclusive access to the remote control unit. Final~~ly,~~ the Testing Party may make specified modifications to the equipment, provided the modifications do not degrade the quality of the communications.

Paragraph 14 requires the Testing Party to provide portable radios, access to vehicle-mounted radios and telephones at the test site so that Designated Personnel may communicate with each other between the test site work area and living quarters or in transit between any of these places. The Testing Party is also required to provide telephones for communications between work sites, and between work sites and living quarters at a Designated Seismic Station.

Paragraph 15 requires Designated Personnel to observe all generally applicable safety rules and regulations, and any additional restrictions regarding access and movement that may be established by the Testing Party. Designated Personnel are entitled access only to areas at which they will directly perform their verification functions. In addition, they may not be present at any place without an escort and prior permission of the Testing Party Representative, except those places that are so marked on the diagrams of the test site or Designated Seismic Stations provided to the Verifying Party at the first meeting of the Coordinating Group.

Paragraph 16 prohibits Designated Personnel from seeking or being given access by physical, visual, or technical means to the interior of the explosive canister, to information describing the explosive design, or to equipment for control and firing of the explosive. However, paragraph 16 also provides that the Testing Party may not locate explosive design information in such a way as to impede verification in accordance with the Protocol.

Paragraph 17 prohibits the possession or use by Designated Personnel anywhere in the territory of the Testing Party of any firearms, ammunition, or narcotics that have not been medically prescribed. In addition, they may not use or possess specified items at the test site or a Designated Seismic Station, including photographic, video and sound recording equipment, radio equipment, teleoptical devices, and personal computers, except as specifically provided for in the Protocol.

Paragraph 18 prohibits Designated Personnel from removing air, water, plant or soil samples, rock samples or debris, metal objects, or animals without the written approval of the Testing Party Representative, except as specifically provided in the Protocol. Paragraph 19 guarantees the right of Designated Personnel to remove from the territory of the Testing Party all items, including data, obtained in accordance with the Protocol. Paragraph 20 gives the Testing Party the right to inspect baggage and personal possessions of Designated Personnel upon their arrival and departure from the test site and Designated Seismic Stations, as well as packages received by them at, or sent by them from, these places. All inspections must be in the presence of Designated Personnel.

Paragraph 21 places responsibility on the Verifying Party for all the costs of verification activities set forth in the coordinated schedule, including the cost of specified goods and services requested by and provided to the Verifying Party and the cost of refueling and servicing its aircraft, except for those verification-related costs otherwise provided for by paragraph 22, 23, or 24 or by agreement of the Parties. Paragraph 22 provides that the Testing Party is responsible for all costs related to the preparation of test sites, Designated Seismic Stations, and storage facilities used by Designated Personnel in accordance with the Protocol. Paragraph 23 provides that the Testing Party is responsible for the costs of conducting any reference test and for the costs of drilling or excavating the second and third satellite holes that may be requested by the Verifying Party for a test of non-standard configuration having a planned yield exceeding 50 kilotons. Finally, under paragraph 24, the Testing Party is also responsible for the cost of transporting equipment to and from the sites where it elects to inspect or familiarize itself with the equipment after the equipment has arrived at the point of entry, and the costs of transporting the equipment to and from a storage site.

Paragraph 25 provides that if the Verifying Party notifies the Testing Party of its intention not to go through with previously notified verification activities, the Verifying Party must reimburse the Testing Party for agreed technical and logistical support costs incurred by the Testing Party prior to that time.

SECTION XI.

Section XI establishes the institutional arrangements and procedures for implementing verification activities and for settling questions that may arise in connection therewith. Paragraph 1 establishes a Bilateral Consultative Commission to facilitate implementation of the Protocol. In addition, in paragraph 6, the Parties agree to establish a Coordinating Group under the auspices of the BCC for each test for which verification activities under the Protocol are to be carried out.

The BCC is not established as a standing body, but is to meet at the request of a Party to consider questions relating to implementation of, or compliance with, the TTBT or the Protocol. It may also consider amendments to either of these instruments. It is specifically given authority to consider the implications of new verification technologies having a bearing on the Treaty or the Protocol. Finally, it is empowered to consider certain technical or administrative changes, to seek agreement of the Parties on those matters where such agreement is specifically contemplated by the Protocol, and to seek agreement on verification costs and payment procedures.

Paragraphs 2 through 4 specify that changes in certain time periods, logistical arrangements, and technical verification procedures may be agreed upon in the BCC. Such changes would not be considered amendments of the Treaty. These paragraphs deal with technical, administrative or operational matters that may require adjustment in light of practical experience with verification activities, but which do not implicate the major obligations or policies of the TTBT or the Protocol.

Paragraph 5 obligates the Parties to establish regulations for the BCC through consultation, and authorizes the Parties to amend those regulations.

In paragraph 6 the Parties agree to establish a Coordinating Group of the BCC for each test for which verification activities will be carried out. The BCC is authorized to establish and amend procedures governing the activities of Coordinating Groups.

The Coordinating Group is responsible for coordinating the activities of the Verifying Party with the activities of the Testing Party with respect to the specific test for which the Coordinating Group was established. Paragraph 7 provides that the Coordinating Group shall operate from the beginning of preparation for verification activities until the last departure of Designated Personnel from the territory of the Testing Party.

By virtue of paragraph 8, all members of the Coordinating Group from the Verifying Party must be taken from the list of Designated Personnel. The Representative of the Verifying

Party, who will also be the principal Designated Personnel Team Leader, must be designated simultaneously with the notice of intent to carry out verification activities. Within 15 days of receipt of that notice the Testing Party must name its Representative to the Coordinating Group. Paragraph 9 requires that within 25 days of receipt of notice by the Verifying Party of its intention to carry out verification activities provided for in the Protocol, the first meeting of the Coordinating Group must take place in the capital of the Testing Party. Thereafter, it meets at the request of either Party.

At the first meeting of the Coordinating Group, paragraph 10 requires the Testing Party to present, on the first day of that meeting, a comprehensive list of all its planned activities that could affect the rights of the Verifying Party. The list must be specific and set forth precise times and durations of activities. If the Verifying Party has notified the Testing Party of its intention to carry out hydrodynamic yield measurements or on-site inspection, the Testing Party must provide additional specified information regarding the number and orientation (vertical or horizontal) of emplacement holes, the number of explosions in the test and in each hole, and the emplacement points. In addition, if the Verifying Party has notified the Testing Party of its intention to use the hydrodynamic yield measurement method, the Testing Party is required to provide information as to whether the planned yields of individual explosions in a test including two or more explosions exceed 35, and 50 kilotons, and additional information on emplacement holes, canisters, by-pass and access tunnel cavities, choke sections, and density of certain stemming material with respect to tests of non-standard configuration.

Within 15 days following the convening of the first Coordinating Group meeting, the Verifying Party is required by paragraph 11 to provide a list specifying verification activities that it intends to carry out as well as those that it intends not to carry out. At that same time the Verifying Party is required to provide a preliminary statement setting forth its requirements for technical and logistical support for its verification activities and, in addition, to indicate whether or not it requires the Testing Party to provide specified sensing and electrical cables. If the Verifying Party has notified the Testing Party of its intent to use the hydrodynamic yield measurement method with respect to a test of non-standard configuration, the Verifying Party must also state whether it requires a reference test, and whether it will actually conduct hydrodynamic yield measurements and, if so, which measurements and its detailed satellite hole requirements.

Paragraph 12 provides that within 10 days following receipt of the information specified in paragraph 11 the Parties, within the Coordinating Group, must develop and agree upon a coordinated schedule that ensures the proper exercise of the verification rights provided by the Protocol. The schedule must include precise times and durations for verification activities. Those times and durations must take account of the numbers of Designated Personnel permitted under Sections V, VI and VII of the Protocol.

Paragraph 13 provides that agreement of the Representatives of each Party in the Coordinating Group shall constitute agreement of the Parties for that purpose, except for specified parts of Section III dealing with agreements on specific verification measures in situations where the Testing Party would otherwise be constrained in its operations or prohibited from conducting the test involved, and except for paragraph 2 of Section XII dealing with public release of information.

Paragraph 14 requires each Designated Personnel Team Leader at the test site and each Designated Seismic Station to prepare a factual report in English and Russian upon completion of verification activities, listing those activities, with dates of completion, and attaching lists of all information, photographs, data, and samples received in the course of conducting these activities, as well as a list of supporting technical and logistical activities provided by the Testing Party. Each Designated Personnel Team Leader is required to comment on ambiguities not resolved during the verification activities; the Representative of the Testing Party may respond. Both must sign the report and retain a copy. The report must be completed before the scheduled departure of Designated Personnel from the test site or Designated Seismic Station.

Paragraph 15 provides that the Coordinating Group may resolve issues that arise in the course of verification activities and that require prompt resolution. If the Coordinating Group cannot resolve such an issue, paragraph 15 requires that the issue be referred to the BCC.

SECTION XII.

Paragraph 1 provides that nothing in the Treaty or Protocol affects the proprietary rights of a Party in information provided by it in accordance with the Treaty and Protocol, or in information that may be disclosed to the other Party or that may become known to the other Party in preparing for or conducting a test. Claims to such proprietary rights, however, must not impede implementation of the provisions of the Treaty and the Protocol. Proprietary rights refers to rights such as patent, trademark or copyright protection, as for example, might cover the design of drilling equipment or a geological study.

Paragraph 2 provides that information provided in accordance with the Protocol or material using such information, may be publicly released or published by the Testing Party or by the Verifying Party if the Testing Party so agrees, while public release of the results of observation or measurements made by Designated Personnel may take place only with the agreement of both Parties. These obligations do not prohibit the Verifying Party from making public statements with regard to conclusions on compliance with the obligations of the TTBT that are derived from the results of observation and measurements by Designated Personnel, in contrast to the raw data obtained by such observation and measurements.

Section XIII.

Section XIII confirms that the Protocol is an integral part of the TTBT. Accordingly, it enters into force at the same time as the TTBT and remains in force as long as the TTBT remains in force.

June 22, 1990

SECTION BY SECTION ANALYSIS OF THE PROTOCOL TO THE TREATY ON UNDERGROUND NUCLEAR EXPLOSIONS FOR PEACEFUL PURPOSES

The Protocol consists of a preamble and thirteen sections, organized as follows:

Section I.	Definitions
Section II.	Explosion Depth and Composition
Section III.	Verification Measures
Section IV.	Notifications and Information Relating to Explosions
Section V.	Hydrodynamic Yield Measurement Method
Section VI.	Local Seismic Network
Section VII.	On-Site Inspection
Section VIII.	Equipment
Section IX.	Designated Personnel and Transport Personnel
Section X.	Entry, Transport, Food, Lodging and Provision of Services for Designated Personnel and Transport Personnel
Section XI.	Procedures for Consultation and Coordination
Section XII.	Release of Information
Section XIII.	Entry Into Force

PREAMBLE

In the Preamble the Parties confirm the provisions of the Treaty Between the United States of America and Union of Soviet Socialist Republics on Underground Nuclear Explosions for Peaceful Purposes (PNET), confirm that nuclear explosions for peaceful purposes are those underground explosions conducted outside national nuclear test sites (a fact that the Protocol takes into account) and state their conviction that effective verification of compliance with the PNET is necessary.

SECTION I.

Section I defines terms whose meanings are constant throughout the Protocol. The introductory sentence incorporates in the Protocol, by reference, the definitions of terms contained in Article II of the PNET. Hence whenever the term "explosion" is used in the Protocol, it refers to any individual or group of underground nuclear explosions for peaceful purposes. Because this term encompasses both individual and group explosions, any provision in the Protocol that refers to the yield of an explosion refers to the yield of an individual explosion or aggregate yield of a group explosion. The term "group explosion" is defined in Article II(c) of the PNET which specifies the time intervals and spacing criteria that are used to distinguish individual explosions from separate explosions that are in such proximity in time and space that they are collectively considered a "group explosion."

1. The term "emplacement hole" is defined as the entire interior of any drill-hole, shaft, adit or tunnel in which an explosive, associated cables and other equipment are installed to carry out an explosion. An emplacement hole may contain more than one explosive.

2. The term "Verifying Party" is defined as the Party entitled to carry out, in accordance with the Protocol, activities related to verification of compliance with the PNET by the Party carrying out an explosion.

3.-4. The terms "Designated Personnel" and "Transport Personnel" are used to mean personnel appointed by the Verifying Party from among its nationals, in accordance with specified procedures, to carry out verification activities in the territory of the Party carrying out the explosion, in accordance with the Protocol, or to provide transportation, respectively.

5. The term "point of entry" is defined as Washington, D.C. (Dulles International Airport) in the case of the United States, and Moscow (Sheremetyevo-2 Airport) in the case of the Soviet Union. The paragraph also contemplates the possibility

that other points of entry may be mutually agreed upon in the Coordinating Group, as for example may be appropriate if an explosion is scheduled at a location for which another airport would be more convenient. The point of entry is the place at which Designated Personnel and Transport Personnel of the Verifying Party and equipment of the Verifying Party must enter and leave the territory of the Party carrying out the explosion.

6. The term "on-site inspection" is used to describe activities specifically provided in the Protocol, carried out by the Verifying Party in the territory of the Party carrying out the explosion for the purpose of independently obtaining data on conditions under which the explosion will be conducted, and for confirming the validity of data provided by the Party carrying out the explosion.

7. The term "hydrodynamic yield measurement method" is used to describe the method whereby the yield of an explosion is derived from on-site, direct measurement of the position of the shock front as a function of time during the hydrodynamic phase of the ground motion produced by the explosion.

8. The term "local seismic network" is used to describe the array of seismic stations and the control point temporarily deployed, in accordance with the Protocol, for the purpose of identifying the number of individual explosions in a specific group explosion.

9-10. The terms "Joint Consultative Commission" and "Coordinating Group" are used to describe the Commission established under Article V of the PNET and a working group established under Section XI of the Protocol, respectively.

11. The term "Nuclear Risk Reduction Centers" means the centers located in Washington and Moscow, established by the agreement between the U.S. and the Soviet Union of September 15, 1987.

SECTION II.

Section II establishes substantive obligations regarding the location of explosions, and reiterates an obligation established under the PNET regarding certain group explosions.

Paragraph 1 sets a minimum depth below the ground surface for each explosion. The minimum depth requirement is based on the planned yield of the explosion and is designed to limit the opportunity of gaining certain weapon-related benefits.

Paragraph 2 reiterates the obligation contained in Article III(2)(b)(1) of the PNET. Group explosions having aggregate yields exceeding 150 kilotons are prohibited unless the Parties agree upon specific procedures to implement appropriate provisions of Sections V and VI of the Protocol so as to permit determination of the yield and identification of each individual explosion in the group. If a Party proposes such a group explosion the Parties would have to develop and agree upon such procedures before the explosion could take place.

Paragraph 3 provides that no explosion with a yield (or planned aggregate yield) over 35 kilotons shall take place in a cavity with a volume exceeding 20,000 cubic meters, unless the Parties agree on specific verification measures with respect to that explosion. As with explosions covered by paragraph 2, the Parties would have to develop and agree on specific verification measures before an explosion could be carried out in a cavity exceeding the prescribed volume.

SECTION III.

Section III establishes the basic verification rights with respect to explosions above a specified yield level, and in that connection clarifies the coverage of the PNET.

Paragraph 1 provides that all nuclear explosions, except those conducted at national test sites and therefore covered by the Treaty Between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Underground Nuclear Weapon Tests (TTBT) and its Protocol, shall be subject to the PNET and to verification of compliance in accordance with its Protocol. The Verifying Party is accorded the right to use the hydrodynamic yield measurement method to measure the yield of any individual explosion having a planned yield exceeding 50 kilotons and to measure separately the yield of any individual explosion that is part of a group explosion having a planned aggregate yield exceeding 50 kilotons. If the Verifying Party uses the hydrodynamic yield measurement method it also has the right to use a temporarily deployed local seismic network to identify each individual explosion in any group explosion having a planned aggregate yield exceeding 150 kilotons. Finally, the Verifying Party has the right to carry out on-site inspection with respect to any single or group explosion having a planned yield (or planned aggregate yield) exceeding 35 kilotons. Nevertheless, the Verifying Party shall not have the right to on-site inspection with respect to an explosion having a planned yield exceeding 50 kilotons if it elects to use the hydrodynamic yield measurement method for that explosion. Because the PNET and its Protocol apply to all nuclear explosions conducted outside specified national nuclear test sites, the verification rights in Section III extend to all such explosions that meet the specified yield levels.

If a Party were to carry out a nuclear explosion outside its territory, the provisions of the Protocol would fully apply to that explosion. Article VII(2) of the PNET prohibits each

Party from carrying out an explosion in the territory of another state unless that state agrees to the implementation in its territory of, among other things, the provisions of the Protocol. Article VII(2) also prohibits a Party from assisting in, or participating in carrying out, an explosion in the territory of another state unless that state similarly agrees to the implementation in its territory of the provisions of the Protocol. If the provisions of the Protocol could not technically be applied automatically, such as the designation of a point of entry, appropriate adjustments would have to be reflected in an agreement with the third state for implementation of the Protocol with respect to the explosion in its territory.

Paragraph 2 of Section III provides that the Party carrying out an explosion shall bear full responsibility for, and shall have exclusive control over, the conduct of the explosion.

Paragraph 3 provides that Designated Personnel are responsible for the working of their equipment, for participating in such operations as the Party carrying out the explosion may require (such as dry runs) and for recording data at the time of the explosion. The Party carrying out the explosion is not obligated to delay an explosion because of any malfunction of equipment or inability of Designated Personnel to carry out these functions, unless the Party carrying out the explosion has caused the malfunction or inability.

SECTION IV.

Section IV sets forth procedures for providing notifications and information related to specific explosions. It establishes deadlines, procedures, notification and informational requirements, and related rights and obligations. Paragraph 1 requires all notifications to be transmitted through the Nuclear Risk Reduction Centers. Other information provided in accordance with the Protocol may also be transmitted, if appropriate, through these Centers. It is contemplated that all notifications shall be in writing. Paragraphs 2 through 12 establish the requirements governing notifications and provisions of information relating to explosions. The basic structure is as follows:

Time of Notification	Content of Notification
Entry into force (para 2)	Party carrying out the explosion provides notice of whether it plans any explosion over 35 kilotons for the remainder of the calendar year and for the next calendar year.
July 1 (para 2)	Party carrying out the explosion provides notice of whether it plans any explosion over 35 kilotons, and if so, how many in next calendar year.
180 days prior to emplacement of explosive (para 3)	Party carrying out the explosion provides information on the explosion and location.

150 days prior to emplacement of explosive (para 4)	Verifying Party provides notice of its intent regarding verification measures to be used.
60 days prior to explosion (para 6)	Party carrying out the explosion provides specific information on explosion and location.
2 days prior to explosion (para 8)	Party carrying out the explosion provides precise time of detonation.
Within one year following explosion (para 12)	Request may be made by Verifying Party for clarification of information (to be provided by Party carrying out the explosion within 30 days).

Paragraph 2 provides that by July 1 of a given year each Party shall inform the other Party whether or not it intends to conduct any explosion during the following calendar year having a planned yield (or planned aggregate yield) exceeding 35 kilotons, and, if so, how many. On the date of entry into force of the Treaty, each Party will provide that information covering the remainder of the calendar year in which the Treaty enters into force and the following calendar year.

Paragraph 2 also requires that changes in the data provided shall be immediately provided to the other Party.

Paragraph 3 requires the Party carrying out the explosion, at least 180 days prior to the planned date of the beginning of emplacement of the explosive or explosives for every explosion having a planned yield (or planned aggregate yield) exceeding 35 kilotons, to notify the Verifying Party of its intention to carry out the explosion and to provide the Verifying Party with the most accurate available information on the planned date, purpose, location and planned yield of the explosion; the number of explosives, planned date of beginning of emplacement, and planned depth of burial of each explosive; the type of rock in which the explosion will take place (including the depth of the water table); and a description of specific technological characteristics of the project that may affect determination of its yield and confirmation of its purpose.

Paragraph 4 provides that following receipt of the information specified in paragraph 3, and no less than 150 days prior to the planned emplacement date, the Verifying Party must indicate, in a single notification, whether or not it intends to exercise its on-site inspection rights or its hydrodynamic yield measurement rights. The Verifying Party has the right to conduct on-site inspection as provided in Section VII with respect to any explosion having a planned yield (or planned aggregate yield) exceeding 35 kilotons if, with respect to an explosion having a planned yield exceeding 50 kilotons, it does not exercise its right to use the hydrodynamic yield measurement method. The Verifying Party has the right to use the hydrodynamic yield measurement method with respect to any explosion having a planned yield (or planned aggregate yield) exceeding 50 kilotons if it does not exercise its alternative right to on-site inspection. In the case of a group explosion having a planned aggregate yield exceeding 150 kilotons, the Verifying Party has the right to use a local seismic network in connection with its use of the hydrodynamic yield measurement method.

Paragraph 5 provides that if the Verifying Party declares its intention not to conduct the activities described in paragraph 4, it shall forfeit its verification rights unless the other Party provides notice of a change in the location of the explosion by more than one minute of latitude or longitude or in the planned date of the explosion indicated in the initial notification by 60 days or more. Within 30 days of such a change, the Verifying Party has the right to revise its notification pertaining to conduct of verification activities.

If the Verifying Party elects to revise its notification and use the hydrodynamic yield measurement method or carry out on-site inspection, the beginning of emplacement of explosives shall not occur less than 90 days from the date of the Verifying Party's revised notification, unless the Parties otherwise agree. The Party carrying out the explosion shall thereafter provide the Verifying Party with the information that it is required to provide in accordance with paragraph 6 or 7. If the Verifying Party decides not to conduct the verification activities specified by it in its initial notification after technical and logistical support requirements for these activities have been agreed upon in the Coordinating Group, the Verifying Party must reimburse the other Party for the previously incurred costs of such technical and logistical support.

Paragraphs 6 and 7 require the Party carrying out an explosion to provide the Verifying Party with the following information if the latter indicates its intention to use the hydrodynamic yield measurement method or to carry out on-site inspection:

-- the number of explosives; the planned yield of each explosive; the planned depth of emplacement of each explosive with an accuracy of 10 meters; the planned point of emplacement of each explosive to be used in a group explosion relative to all other explosives in the group with an accuracy of ten percent of the distance between that explosive and the nearest other explosive, but in no case with an error greater than 100 meters; and the planned time intervals between individual explosions in each group explosion with an accuracy of 0.1 second;

-- a description of the geological and geophysical characteristics of the site of each explosion that could influence determination of the yield, including the depth of the water table; a stratigraphic (in the case of hydrodynamic yield measurement) or lithologic (in the case of on-site inspection) column above each emplacement point; the position of each emplacement point relative to nearby geological and other features that influenced the design of the project of which the explosion is a part; and the estimated physical parameters of the rock within each hydrodynamic measurement zone;

-- the locations and purposes of facilities and installations that are associated with the conduct of the explosion;

-- the planned date of the beginning of emplacement of each explosive;

-- a topographic chart, with geographic coordinates accurate to one minute of latitude and longitude, covering circular areas of 15-kilometer radius centered above each point of emplacement, at a scale of 1:24,000 or 1:25,000 with a contour interval of 10 meters or less, showing the planned location of each explosive marked on the chart with an accuracy of 50 meters.

-- the planned cross-sectional dimensions of each emplacement hole in each hydrodynamic measurement zone; and

-- the location and configuration of any known cavities larger than one cubic meter within each hydrodynamic measurement zone. In addition, if the Verifying Party notifies the Party carrying out the explosion of its intent to use the hydrodynamic yield measurement method, the following additional information must be provided: the length of each canister in which an explosive will be contained; the dimensions of any pipe or other device that will be used to emplace each such explosive canister; and a description of materials, including their densities, to be used to stem the emplacement hole within each hydrodynamic measurement zone.

Paragraph 8 requires the Party carrying out an explosion to inform the Verifying Party of the planned time of detonation of each explosive, with an accuracy of 0.1 second, at least two days prior to the explosion and to inform the Verifying Party of any subsequent change in the detonation time. No later than 10 days after the explosion the Verifying Party must be informed of the actual detonation time.

Paragraph 9 requires the Party carrying out an explosion to notify the Verifying Party immediately of any change in any information provided under paragraphs 3, 6, or 7 of Section IV. If the Verifying Party has notified the Party carrying out the explosion of its decision to use the hydrodynamic yield measurement method or to carry out on-site inspection, the beginning of emplacement of explosives shall not occur less than 90 days after the notification of any change that requires more extensive verification procedures than would be required on the basis of the initial information, unless an earlier emplacement date has been agreed upon by the Parties. Such changes include: a change in the location of the explosion by more than one minute of latitude or longitude; a change in the number of explosives in a group explosion; a change in the planned explosion yield (or aggregate yield); a change in the purpose of the explosion; or a delay in the planned date of the explosion by more than 90 days.

Paragraph 10 establishes the procedures and constraints applicable to an explosion that is intended to deal with certain emergency situations. An emergency situation is described as one that arises out of an unforeseen set of circumstances and requires immediate action, such that it would be practically impossible to adhere to the 180-day notice requirement set forth in paragraph 3. In such a situation the Party making the decision to carry out an explosion shall notify the Verifying Party of this decision immediately after it has been made and shall describe the circumstances and the planned yield (or planned aggregate yield) of the explosion. Unless otherwise agreed by the Parties, the planned yield (or planned aggregate yield) shall not exceed 100 kilotons and the explosion shall not include more than three individual explosions. The Party carrying out such an explosion is required to provide the Verifying Party with all the information that would normally be provided, to the extent such information is available, after making its decision to carry out such an explosion, and in any event no less than 60 days prior to the beginning of emplacement of explosives.

Finally, the Verifying Party must decide, within 15 days of receipt of notification of an explosion for an emergency purpose, whether to carry out verification of that explosion by means of the hydrodynamic yield measurement method. If it decides to use that method it shall deliver hydrodynamic yield measurement equipment to the point of entry not later than 35 days prior to the planned emplacement date. This equipment must be handed over, in the same condition as that in which it was received, to Designated Personnel at the explosion site for emplacement, installation, and use no less than 20 days prior to the planned emplacement date.

Paragraph 11 gives the Party carrying out an explosion the right to make changes in the schedule of operations related to the conduct of an explosion. However, if the Verifying Party exercises its right to use the hydrodynamic yield measurement method or carry out on-site inspection, the other Party must immediately inform the Verifying Party of any change in the schedule of operations, and shall not carry out the explosion more than five days prior to the planned date of the explosion indicated in the initial notification, unless the Parties otherwise agree.

Paragraph 12 allows the Verifying Party a period of one year to request clarification of any point of information provided. Such clarification must be given in the shortest possible time, but in no event later than 30 days after receipt of a request.

SECTION V.

Section V sets forth the procedures, rights and conditions applicable when the Verifying Party elects to use the hydrodynamic yield measurement method of verification.

Paragraph 1 defines the "hydrodynamic measurement zone" as a cylindrical zone having the same axis as the emplacement hole, extending from at least 7.5 meters below the midpoint of the explosive canister to a point at least 25 meters above that midpoint and with a radius of at least 7.5 meters. The actual size of the zone is directly related to the planned yield of the explosion. In the case of a group explosion there will be a separate zone for each explosive.

Within that zone, Designated Personnel are authorized by paragraph 2 to emplace specified hydrodynamic measurement equipment in the same emplacement hole as that in which the explosive is located. Designated Personnel are required to install sensing elements, associated cables and recording facilities in accordance with instructions previously furnished to the other Party, and under its observation. Personnel of that other Party shall assist in such installation if requested to do so by Designated Personnel. The location of each recording facility and its command and monitoring facility of the Verifying Party is to be determined by agreement of the Parties.

The end of sensing elements and associated cables must be located in the emplacement hole three meters from the surface of the explosive canister closest to the entrance to the emplacement hole, at a location relative to the axis of the emplacement hole agreed upon by the Parties. No more than six sensor channels are permitted for each explosive canister. Each Party is required to measure the distances to the sensors and to exchange these measurements. A Party may not use an explosive canister having a length greater than 10 meters or a diameter greater than three meters without prior agreement of the other Party. This requirement significantly constrains the ability of the Party carrying out the explosion to pursue certain evasion techniques that would take advantage of a relatively large space in the canister not occupied by the explosive device. The Party carrying out the explosion is also required to fill all voids and pipes in the hydrodynamic measurement zone with stemming material meeting specified requirements, depending on length and configuration of the emplacement hole and the number of explosives. While the Party carrying out the explosion bears the cost of stemming the emplacement hole, the Verifying Party is required to bear any additional costs incurred in ensuring that the stemming material density meets Protocol specifications.

Paragraph 3 constrains the conduct of group explosions with respect to which the hydrodynamic yield measurement method is used. The Party carrying out a group explosion is required to take steps regarding emplacement points, detonation sequences and time intervals so that no single explosion interferes with the hydrodynamic yield measurement of any other explosion. If the technological characteristics of a project involving a group explosion having a planned aggregate yield of 150 kilotons or less make it impossible to meet this requirement, the Parties are required to agree on alternative hydrodynamic or other verification procedures before explosives can be emplaced. Pending such agreement the group explosion cannot be carried out. Group explosions having a planned aggregate yield exceeding 150 kilotons, which are also dealt with in Section II, paragraph 2 of the Protocol, are never exempt from the non-interference requirement. Group explosions having a planned aggregate yield exceeding 150 kilotons are prohibited unless the Parties agree on specific procedures to identify each individual explosion and on specific hydrodynamic yield measurement procedures to determine the yield of each individual explosion.

Paragraph 4 gives the Verifying Party the right to confirm the validity of the geological and geophysical information provided it in accordance with Section IV. Accordingly, it may analyze studies, data, core samples, and rock fragments provided by the Party carrying out the explosion. It has the right to observe logging and extraction of core samples or rock fragments from the emplacement hole or from a prescribed exploratory hole, or to extract such samples itself if the other Party does not do so. Designated Personnel have the right to examine the logging data, core samples, and rock fragments and to remove them from the territory of the Party carrying out the explosion.

Paragraph 5 gives Designated Personnel the right to confirm the accuracy of information furnished by the other Party, by direct measurement, by batch sampling, and by field measurements, in accordance with specified procedures. Data, including calibration data, dealing with geological and geophysical site characteristics and with the location and configuration of voids must be duplicated, with a copy provided to each Party.

Paragraph 6 gives Designated Personnel the right to have access to the explosion site and related facilities and structures, as well as to their equipment from commencement of its use (at least 20 days before emplacement of explosives in accordance with Section VIII (8)(d)) until departure of all personnel from the explosion area prior to the explosion. They are entitled to observe the emplacement of each explosive canister, to confirm its depth and location relative to any other explosive canister, and to observe the stemming of the emplacement hole. They are also entitled to observe their measurement equipment by remote closed-circuit television, to observe the explosion, to monitor the integrity of their recording equipment, and to record and transmit data to their command and monitoring facility.

Paragraph 7 requires the Party carrying out the explosion, at the request of the Verifying Party, to produce a timing reference signal prior to the explosion and a zero-time reference signal. The Verifying Party may generate a timing reference signal using the electromagnetic pulse from its hydrodynamic measurement cables if it so chooses. In that event it may transmit, use, and record that signal without intervention by the Party carrying out the explosion.

Paragraph 8 specifies the conditions applicable to the acquisition of photographs by Designated Personnel. The

Verifying Party is entitled to provide the cameras. However, photographs must be taken by personnel of the Party carrying out the explosion as requested by, and in the presence of, Designated Personnel. Designated Personnel may request that a photograph show the size of an object by including a measuring scale provided by the Verifying Party, and may also request that repeat photographs be taken if for any reason they are not satisfied with the original. In particular, Designated Personnel have the right to determine the adequacy of photographs of the emplacement operation before the object being photographed becomes permanently hidden from view. If Designated Personnel are not satisfied, the emplacement operation must not proceed until adequate photographs are produced. However, the cumulative delay from this photographic process may not exceed two hours for each emplacement operation unless the Parties otherwise agree.

Paragraph 9 specifies that Designated Personnel may obtain photographs of the exterior of installations and structures associated with the conduct of the explosion; the emplacement of each explosive canister and stemming of each emplacement hole; geological samples and equipment used in obtaining such samples; emplacement and installation of hydrodynamic yield measurement equipment and cables associated with it; containers, facilities and structures for storing and operating the equipment used by Designated Personnel; and whatever additional verification-related activities of Designated Personnel may be agreed by the Parties.

Paragraph 10 provides that any equipment declared by the Party carrying out the explosion to be unacceptable for use at the time of the explosion must be sealed by both Parties. It is then placed in the custody of the Party carrying out the explosion at a time agreed upon by both sides.

Paragraph 11 provides that Designated Personnel, in the presence of personnel of the Party carrying out the explosion, shall recover data records and prepare two copies, one of which is selected by lot and retained by the Party carrying out the explosion. Designated Personnel retain the other copy, but retain no other data and have no subsequent access to their recording facility and equipment until these are returned to the Verifying Party following inspection by the Party carrying out the explosion, unless the Parties agree to allow such access, in which case it must be under the observation of personnel of the Party carrying out the explosion. Designated Personnel must provide information on sensor location, a description of the recording format used for digital recording of signals, and a sample of the computer program for reading digital data. This program must be handed over upon arrival of Designated Personnel at the point of entry.

Paragraph 12 provides that Designated Personnel shall not be present in areas from which personnel of the Party carrying out the explosion have been withdrawn, during the conduct of the explosion, but shall have the right to reenter those areas at the same time as personnel of the Party carrying out the explosion.

SECTION VI.

Section VI sets forth the procedures, rights, and conditions for the use of a temporarily deployed local seismic network, in conjunction with the use of the hydrodynamic yield measurement method, to monitor a group explosion having a planned aggregate yield exceeding 150 kilotons. Paragraph 1 establishes the basic right to install and use a local seismic network in that situation. Such installation and use must be under observation of personnel of the Party carrying out the explosion. In addition, if Designated Personnel so request, the Party carrying out the explosion is required to provide assistance in such installation and use.

Paragraph 2 limits the area in which the network may be located to an area circumscribed by a circle of 15-kilometer radius centered on the ground surface above each explosive emplacement point and it also limits the number of stations that may be included to the number of individual explosives plus eight. The Verifying Party determines the number of stations, but their specific locations must be agreed by the Parties.

Paragraph 3 specifies that the control point of the network must be installed at an agreed location outside the evacuated area around the explosion site but inside the area encompassing the network itself, unless the Parties otherwise agree.

Paragraphs 4 and 5 provide that installation of the network may begin 20 days prior to the explosion and may operate from the time of installation until three days after the explosion, unless the Parties otherwise agree. Designated Personnel have the right to have access to their equipment in the control point during that period and until five days following the explosion. They may use radio communication for transmission and reception of data and control signals between the control point and the individual stations of the network, under conditions agreed by the Parties, for up to three days following the explosion.

Paragraphs 6, 7, and 8 guarantee Designated Personnel access along agreed routes to the stations and control point of the network, the right to use and retain the topographic map previously furnished to the Verifying Party, and the right to obtain photographs associated with the network under the same procedures as are applicable during use of the hydrodynamic yield measurement method.

Paragraph 9 requires Designated Personnel to provide the original and a copy of prescribed data within five days following the explosion. The Party carrying out the explosion selects one copy in the presence of Designated Personnel, who are entitled to retain the other. The Verifying Party is required to provide a sample of the computer program for reading digital data at the time of Designated Personnel arrival at the point of entry and a description of the recording format. Seismic recordings must include an agreed common time reference and must cover the period beginning at least 30 seconds before the arrival of the first explosion-generated P-wave at any station of the local network and ending no more than three days after the last explosion, unless the Parties otherwise agree.

SECTION VII.

Section VII prescribes the procedures, rights, and conditions governing on-site inspection. On-site inspection may be used for any explosion having a planned yield (or planned aggregate yield) exceeding 35 kilotons, except that for explosions having a planned yield (or planned aggregate yield) exceeding 50 kilotons it may be used only if the Verifying Party does not use the hydrodynamic yield measurement method.

Paragraph 1 gives Designated Personnel the right to analyze relevant studies, data, and specified core samples or rock fragments provided by the other Party, and to utilize their own equipment to log the emplacement hole and take sidewall rock samples from a specified part thereof. All logging data produced by either Party must be duplicated, with one copy to each Party. Designated Personnel have the right to examine and remove from the territory of the Party carrying out the explosion, specified core samples, sidewall rock samples, and rock fragments selected by them.

Paragraph 2 gives Designated Personnel the right to confirm information previously submitted by the Party carrying out the explosion by observing measurements being made by the Party carrying out the explosion and by assessing data obtained, and by making measurements themselves to determine the location and configuration of any voids within each hydrodynamic measurement zone. In addition, Designated Personnel have the right of access to the explosion site, to facilities and structures related to the explosion along agreed routes, and to their equipment from commencement of its use at the explosion site until evacuation of personnel from the site before the explosion. Designated Personnel have the right to observe the emplacement of each explosive canister and the stemming of each emplacement hole, as well as the right to observe the entrance area to each emplacement hole from the time of emplacement of each explosive until evacuation of the area prior to the explosion, and to observe the explosion itself. Paragraph 3 gives Designated Personnel the right to obtain photographs associated with on-site inspection in accordance with the same procedures applicable for use of the hydrodynamic yield measurement method.

SECTION VIII.

Section VIII specifies the equipment that Designated Personnel have the right to import, install, and use in connection with verification activities, and establishes procedures and conditions applicable thereto.

Paragraph 1 establishes the basic rights covering equipment specifically described in subsequent paragraphs for each of the activities related to verification, as well as equipment that may be installed and used in connection with any of these activities. The latter category includes: geologists' field tools and kits, geodetic equipment, topographic survey equipment, equipment for recording of field data, and equipment for rapid photo processing; portable short-range communication equipment with agreed specifications; mobile work stations and temporary facilities; medical and health physics equipment, portable computers and recreational equipment; and satellite communications equipment (if the Party carrying out the explosion does not provide satellite communications equipment for use by Designated Personnel).

By paragraph 2, closed-circuit television equipment is included in the category of permissible equipment. As in the case of satellite communications equipment, the Party carrying out the explosion decides whether to provide such equipment or to permit the Verifying Party to provide it.

Paragraph 3 permits the Verifying Party to provide photographic equipment for use by personnel of the other Party in accordance with the procedures governing the acquisition of photographs applicable in the use of each verification method.

Paragraph 4 provides that additional equipment, agreed upon by the Parties at least 120 days before the planned emplacement date, shall be furnished by the Party carrying out the explosion to the Designated Personnel upon their arrival at the explosion site.

Paragraphs 5, 6, and 7 specify particular types of equipment for hydrodynamic yield measurement, a local seismic network and on-site inspection, respectively. Paragraph 8 specifies the procedures to be followed with respect to that equipment. At least 140 days prior to the emplacement date, the Verifying Party must provide to the Party carrying out the explosion, if it has not previously done so, the equipment and design information, specifications, and operating instructions, relevant to the particular verification activities it has elected to use. The Party carrying out the explosion then has the opportunity to familiarize itself with that equipment and information. No less than 120 days before the planned emplacement date the Party carrying out the explosion must advise the Verifying Party if it has concluded that use of an element of the equipment provided would be inconsistent with its containment or security requirements, in which case it shall specify the modifications required to satisfy its requirements. All the equipment provided must be returned in the same condition as that in which it was received to the Verifying Party at the point of entry at least 90 days before the planned emplacement date.

At least 50 days before the planned emplacement date the Verifying Party is required to provide in sealed containers one set or two identical sets -- at its option -- of the equipment that it intends to use for verification purposes, with the exception of sensing elements and associated cables and equipment for the recording, command and monitoring facilities (if the hydrodynamic yield measurement method will be used) and seismic instruments, equipment for the control point, power supplies, cables and radio equipment (if a local seismic network will be installed) which must be provided in two sets. This equipment must be identical to that previously provided for familiarization, modified in accordance with the containment and security requirements of the Party carrying out the explosion if so required by the Party carrying out the explosion. If equipment is provided in two sets, the Party carrying out the explosion then may select one of the sets for use by Designated Personnel, affix its own seals to the sealed containers, and transport it to the explosion site, ensuring the protection of the equipment throughout the period it is in its territory. The Party carrying out the explosion shall determine the timing of shipment, after consulting with the Verifying Party at least 48 hours in advance of shipment.

Designated Personnel have the right to unimpeded verification of the integrity of their seals, to observe their equipment, to accompany this equipment, and to receive it at the explosion site for installation and use at least 20 days before the planned emplacement date. The equipment shall thereafter remain under the control of Designated Personnel, except that certain seals may not be removed prior to preparation for installation of such equipment.

The set of equipment not chosen for use shall be available for inspection by the Party carrying out the explosion, without the presence of Designated Personnel, for a period ending no more than 30 days following the explosion. It must then be turned over to the Verifying Party in the same condition as that in which it was received at the point of entry.

When the Verifying Party provides one set of equipment, the Party carrying out the explosion has the right to inspect such equipment upon its arrival at the point of entry for up to 30 days without the presence of Designated Personnel. Equipment rejected by the Party carrying out the explosion will not be shipped to the site of the explosion but will be returned to the Verifying Party. The Party carrying out the explosion also has the right to retain up to 150 meters of each type of cable being inspected in connection with the hydrodynamic yield measurement method.

Paragraph 9 requires that Designated Personnel must certify that the equipment delivered to the site of the explosion is in working condition prior to the beginning of emplacement of explosives.

Paragraph 10 establishes the integrity of the facilities used by Designated Personnel by prohibiting access by personnel of the Party carrying out the explosion when Designated Personnel are not present and by allowing access only at the express invitation of, and when accompanied by, the Designated Personnel Team Leader or his designated representative.

Paragraph 10 ensures the right of personnel of the Party carrying out the explosion to observe use of equipment by Designated Personnel, in accordance with specified procedures, and provides access for personnel of the Party carrying out the explosion to facilities of the Verifying Party to participate in activities that require the presence of personnel of both Parties, such as dry runs and data recovery, in accordance with specified procedures.

Paragraph 11 provides that the equipment used for verification be available, on an exclusive basis, to the Party that carried out the explosion for up to 30 days after data recovery, after which the equipment must be returned in the same condition as that in which it was received, to the Verifying Party at the point of entry.

SECTION IX.

Section IX establishes the procedures for designating the personnel who will be involved in verification activities, ensuring their expeditious entry and functioning in the territory of a Party carrying out an explosion, and establishing the equivalent of diplomatic status for them and their activities.

Paragraphs 1 through 3 require each Party to provide the other with a list of proposed Designated Personnel and a list of proposed Transport Personnel, each not exceeding 200 individuals, within 10 days following entry into force of the Treaty. The recipient Party must accept or reject any individual within 20 days and so inform the Party providing the list. Any rejected individual must be deleted from the list. Following submission of an original list, a Party may replace up to 40 Designated Personnel per year (in addition to substitutions due to permanent physical incapacity or death) on the list of Designated Personnel, subject to the same rejection procedure. Paragraph 4 requires the recipient Party to prepare for the issuance of necessary multiple-entry visas and other documents, valid throughout the period of preparation for, and carrying out of, a particular explosion.

Paragraph 5 provides that a Party may strike an individual from the list on specified grounds, and may expel such an individual from its territory.

Paragraph 6 guarantees the right of Designated Personnel, with their baggage and equipment of the Verifying Party, to enter the territory of the Party carrying out the explosion at the point of entry, to remain in that territory and to exit through the point of entry.

Paragraph 7 specifies the privileges and immunities accorded Designated Personnel and Transport Personnel applicable while they are in the territory of the Party carrying out the explosion and, with respect to official acts, thereafter. This paragraph guarantees the equivalent of diplomatic privileges and immunities for Designated Personnel and Transport Personnel, their living and working quarters, their archives, documents, papers and correspondence, as well as the aircraft and transport vehicles of the Verifying Party. Any such immunity may be waived by the Verifying Party but only if the waiver is express.

Paragraphs 8 and 9 specify that Designated Personnel and Transport Personnel may not engage in any professional or commercial activity for personal profit in the territory of the Party carrying out the explosion. Without prejudice to their privileges and immunities, they must respect the laws and regulations of the Party carrying out the explosion, and may not interfere in its internal affairs.

Paragraph 10 provides that if the Party carrying out the explosion considers that an individual has abused his or her privileges or immunities, consultations shall be held to determine the facts and to devise measures to prevent a repetition of such an abuse, if it occurred.

SECTION X.

Section X establishes the obligations and procedures relating to the entry, transport, provision of food, lodging, and other services for Designated and Transport Personnel. Paragraph 1 establishes a general obligation on the part of the Party carrying out an explosion to ensure access and to provide any assistance necessary to enable Designated Personnel to carry out verification activities. In addition, this paragraph specifically guarantees the right of Designated Personnel using the hydrodynamic yield measurement method or on-site inspection to be present at the site of the explosion at whatever times and for whatever periods as may be required to conduct the permitted verification activities. Those times and periods must be specified in the coordinated schedule developed and agreed upon in the Coordinating Group established for that explosion.

Paragraph 2 limits the number of Designated Personnel for various specified activities.

Paragraph 3 requires the Verifying Party to provide the Party carrying out the explosion with specific information at least 20 days before the planned arrival of its Designated Personnel or Transport Personnel. The information includes the names of personnel (with their passports and completed visa applications) including the names of the Designated Team Leader, Deputy Team Leader and Designated Personnel who will escort equipment; point of entry; and scheduled date and estimated time of arrival and mode of transportation to be used. No more than 15 days following receipt of the passports and completed visa applications, the Party carrying out the explosion shall return the passports with visas. If the Verifying Party decides to use an aircraft other than a regularly scheduled commercial aircraft, paragraph 4 requires that the aircraft proceed along agreed upon airways and under a flight plan filed in accordance with procedures established by the International Civil Aviation Organization.

Paragraph 5 obligates the Party carrying out the explosion to do what is necessary to ensure that all necessary approvals and clearances are obtained so that Designated Personnel, their baggage, and equipment of the Verifying Party may arrive at the point of entry by the scheduled arrival date and time, while paragraph 6 obligates the Party carrying out the explosion to assist with customs clearances and to provide transportation to the site of the explosion so as to enable those personnel to exercise their rights and carry out their functions within the times provided for in the Protocol and the coordinated schedule.

Paragraphs 7 and 8 give the Party carrying out the explosion the right to assign escorts to personnel of the Verifying Party, whose movement and travel is at the discretion of the Party carrying out the explosion except to the extent that such movement and travel is guaranteed by provisions of the Protocol.

Paragraph 9 obligates the Party carrying out the explosion to provide food, living and working facilities, secure storage places, and transportation and medical services for personnel of the Verifying Party while they are carrying out verification activities in the territory of the Party carrying out the explosion. It is also obligated to assist the Verifying Party if the latter desires to provide its own food or housing units, subject to specified conditions. Housing units supplied by the Verifying Party are subject to a 30-day inspection before use by Designated Personnel.

Paragraph 10 guarantees the Designated Personnel Team Leader or his designated representative immediate direct communications between the site of the explosion and the embassy of the Verifying Party, and access to a satellite communications link to his own country's telecommunications system.

Paragraph 11 requires Designated Personnel to observe all generally applicable safety rules and regulations, and all other restrictions regarding access and movement, established by the Party carrying out the explosion. Designated Personnel are only entitled to access to areas in which they will directly perform their verification functions.

Paragraph 12 prohibits Designated Personnel from access to the interior of the explosive canister, to information describing the explosive design, or to equipment for control and firing of the explosive. However, paragraph 12 also provides that the Party carrying out the explosion may not locate such information in such a way as to impede verification in accordance with the Protocol.

The costs of verification are allocated by paragraph 13 to the Verifying Party. Those costs may include costs of materials, equipment, leased equipment, transportation and other services, food, living and working facilities, medical assistance and communications. The costs covered by this paragraph cover goods, materials, and services requested by the Verifying Party and provided by the Party carrying out the explosion. Such costs do not cover indirect costs. The rates charged must be the standard or official rates.

Paragraph 14 deals with medical care for Designated Personnel. It gives the Verifying Party the right to bring a medical specialist, with medications and instruments, and additional portable medical equipment agreed upon by the Parties. That specialist has the right to consult on the recommended treatment of any sick or injured Designated Personnel in a medical facility of the Party carrying out the explosion, to monitor that treatment, and to order evacuation either to an agreed medical facility in the territory of the Party carrying out the explosion or to the point of entry. In addition, Designated Personnel are guaranteed the right to refuse any medical treatment prescribed by medical personnel of the Party carrying out the explosion. That refusal must be express, and the Party carrying out the explosion is thereupon relieved of any responsibility for the consequences of that refusal.

SECTION XI.

Section XI establishes the institutional arrangements and procedures for implementing verification activities and for settling questions that may arise in connection therewith.

Paragraph 1 provides that the Parties shall use the Joint Consultative Commission (JCC) established by the PNET to facilitate implementation of the Protocol. In addition, the

Parties agree to establish a Coordinating Group under the auspices of the JCC for each explosion for which verification activities under the Protocol are to be carried out.

Paragraph 2 establishes that the Coordinating Group is responsible for coordinating the activities of the Verifying Party with the activities of the Party carrying out the explosion for which the Coordinating Group was established.

Paragraph 3 provides that the Coordinating Group shall operate from the beginning of preparation for verification activities until the last departure of Designated Personnel from the territory of the Party carrying out the explosion.

By virtue of paragraph 4, all members of the Coordinating Group from the Verifying Party must be taken from the list of Designated Personnel, and the Designated Personnel Team Leader shall be designated along with the notice of intent to conduct verification activities. The Designated Personnel Team Leader is also the Representative of the Verifying Party in the Coordinating Group. Within 15 days of receipt of the notice provided by the Verifying Party, the Party carrying out the explosion must name its Representative to the Coordinating Group. Paragraph 5 establishes that the first meeting of the Coordinating Group must take place within 25 days following that notice in the capital of the Party carrying out the explosion. Thereafter the Coordinating Group shall meet at the request of either Party.

At the first meeting of the Coordinating Group, paragraph 6 requires the Party carrying out the explosion to present a comprehensive list of all its planned activities that affect the rights of the Verifying Party. The list must be specific and set forth precise times and durations of activities. It must cover all activities beginning with the day of the first meeting. At that same meeting the Verifying Party is required to provide a preliminary statement setting forth its requirements for technical and logistical support for its verification activities. Within 10 days of the start of the first meeting, the Parties are required to develop and agree upon a coordinated schedule that ensures the proper exercise of the verification rights provided by the Protocol. It is expected that the schedule will include precise times and durations for verification activities.

Paragraph 7 lists the provisions of the Protocol that contemplate further agreement of the Parties, and it provides that agreement of the Representative of each Party in the Coordinating Group shall constitute agreement of the Parties for that purpose. The provisions involved are operational, administrative, technical, or emergency provisions not affecting the fundamental obligations under the Protocol.

Paragraph 8 provides that upon completion of verification activities the Designated Personnel Team Leader shall prepare a factual report listing those activities and attaching lists of all information, photographs, and data provided or received in the course of conducting these activities. The report must be provided to the Party carrying out the explosion in its capital by the Designated Personnel Team Leader within 15 days of completion of the verification activities.

Paragraph 9 provides that the Coordinating Group may resolve issues that arise in the course of verification activities and that require prompt resolution. If the Coordinating Group cannot resolve such an issue, paragraph 9 requires the issue to be immediately referred to the JCC.

Paragraph 10 implements paragraph 2 of Section II of the Protocol and establishes the procedure applicable when a Party intends to carry out a group explosion having a planned aggregate yield exceeding 150 kilotons. It provides that within 30 days after notification of such intent, the JCC shall be convened at the request of either Party for the purpose of reaching agreement on the specific procedures designed to determine the yield of each individual explosion in the group explosion as well as procedures to identify each individual explosion. Paragraph 2 of Section II and paragraph 10 of Section XI of the Protocol together implement Article III

(2)(b)(1) of the PNET, which permits group explosions with an aggregate yield exceeding 150 kilotons only if the Parties agree on verification measures. The obligations under Article III (2)(b) are independent of the obligation under Article III (2)(a), so that the yield of any individual explosion, either a single explosion or one explosion in a group explosion, may not in any event exceed 150 kilotons absent amendment of the Treaty.

Paragraph 10 also provides that the Party that proposes to carry out such a group explosion may not do so until at least 150 days after agreement on specific verification measures has been concluded.

Paragraph 11 authorizes the JCC to establish and amend procedures governing the activities of the Coordinating Group.

SECTION XII.

Section XII confirms certain proprietary rights in information and restricts the release of information under certain circumstances for the purpose of protecting those proprietary rights.

Paragraph 1 provides that nothing in the Treaty or Protocol affects the proprietary rights of a Party in information provided by it in accordance with the Treaty and Protocol, or in information that may be disclosed to the other Party or that may become known by the other Party in preparing for, or carrying out of, explosions. Claims to such proprietary rights, however, must not impede implementation of the provisions of the Treaty and the Protocol. Proprietary rights refers to rights such as, patent, trademark, or copyright protection, as, for example, might cover the design of drilling equipment or a geological study.

Paragraph 2 provides that information provided in accordance with the Protocol, or material using such information, may be publicly released or published by the Party carrying out the explosion, or by the Verifying Party with the agreement of the Party carrying out the explosion, while public release of the results of observation or measurements made by Designated Personnel may take place only with the agreement of both Parties. These obligations refer to the precise information that is provided in accordance with the Protocol. These obligations do not prohibit the Verifying Party from making public statements with regard to conclusions on compliance with the obligations of the PNET that are derived from the results of observation and measurements by Designated Personnel, in contrast to the raw data obtained by such observation and measurements.

SECTION XIII.

Section XIII confirms that the Protocol is an integral part of the PNET. Accordingly, it enters into force at the same time as the PNET and remains in force as long as the PNET remains in force.

UNITED STATES DELEGATION TO THE NUCLEAR TESTING TALKS
Geneva, Switzerland

May 24, 1990

Mr. Igor Palenykh
Head of USSR Delegation to the
Nuclear Testing Talks

Dear Mr. Palenykh,

In preparing for the use of the seismic yield measurement method in accordance with the Protocol to the Treaty Between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Underground Nuclear Weapon Tests, the U.S. side has identified the conditions and technical requirements for the installation and operation of its seismic equipment at the three Designated Seismic Stations identified by the Union of Soviet Socialist Republics in the letters exchanged by the Sides in Moscow on February 8, 1990. These conditions and requirements are set forth in the document dated May 9, 1990, entitled "Technical Requirements for the Installation and Operation of Seismic Equipment of the U.S. Side at Designated Seismic Stations of the Union of Soviet Socialist Republics." This document is attached to this letter.

The U.S. side has received the document of May 9, 1990, prepared by the Soviet side, entitled "Technical Requirements for the Installation and operation of Seismic Equipment of the Soviet Side at Designated Seismic Stations of the United States of America." For purposes of planning and preparation of the implementation for the provisions contained in the protocol, this document is acceptable to the U.S. side.

With respect to the need to prepare the facilities at the Designated Seismic Stations of the United States of America for use by the Soviet side in exercising its rights under the Protocol, the U.S. side confirms the understanding that this planning and preparation will proceed in three stages.

In the first stage, the U.S. side will prepare construction blueprints and detailed design drawings suitable for use in the construction of facilities that meet the requirements described in the referenced document of the Soviet Side. These construction blueprints and design drawings will be made available for examination, discussion, and agreement with the Soviet side on a schedule to be agreed.

In the second stage, to begin within 10 days following entry into force of the Protocol, unless the sides otherwise agree, the Soviet side will request in writing that all or part of the facilities described by the Soviet side in the referenced document be constructed in accordance with the agreed construction blueprints and design drawings. Construction of the requested facilities at the Designated Seismic Stations on the territory of the United States of America will be completed within 160 days following receipt of the request of the Soviet side, unless otherwise agreed.

In the third stage, to be completed within 20 days following completion of construction of the requested facilities, unless the Parties otherwise agree, it is expected that the U.S. side will host technical experts of the Soviet side on a visit to each of the Designated Seismic Stations in the territory of the United States of America, for familiarization with the facilities to be provided for use by the Soviet side at the Designated Seismic Stations of the U.S. side.

The U.S. side will be guided by the aforementioned provisions in our subsequent work of preparing and implementing the Protocol.

Respectfully,

original signed by CPR
at Plenary, May 24

Ambassador C. Paul Robinson
Head of the U.S. Delegation to the
Nuclear Testing Talks

Attachment: "Technical Requirements for the Installation and Operation of Seismic Equipment of the U.S. Side at Designated Seismic Stations of the Union of Soviet Socialist Republics," 36 pp.

Technical Requirements
For The Installation And Operation Of
Seismic Equipment of the U.S. Side
At Designated Seismic Stations
# of the Union of the Soviet Socialist Republics

May 9, 1990

SECTION I: GENERAL REQUIREMENTS

1. In order to install and operate seismic equipment of the U.S. Side at the three Designated Seismic Stations located on the territory of the Union of Soviet Socialist Republics in accordance with the Protocol to the Treaty Between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Underground Nuclear Weapon Tests, the following facilities may be needed at each of the Designated Seismic Stations:

(a) A vault facility;

(b) A borehole facility;

(c) A cable conduit and walkway;

(d) A data recording and work facility;

(e) Living facilities for Designated Personnel.

2. The vault facility, specified in Section II of these requirements, and the borehole facility, specified in Section IV of these requirements, shall be situated not less than 75 meters and not more than 125 meters from the data recording and work facility, specified in Section VI of these requirements, unless otherwise agreed by the Parties.

3. The seismic equipment pier, located in the vault facility, specified in Section III of these requirements, and/or the borehole facility, specified in Section IV of these requirements, shall be located no closer than 100 meters and not more than 200 meters from the location of the seismic equipment existing at the Designated Seismic Station, unless otherwise agreed by the Parties.

4. The cable conduit and walkway, specified in Section V of these requirements, shall connect the data recording and work facility with the underground vault facility and/or the borehole facility.

5. A facility, specified in Section VI of these requirements, shall be provided for the exclusive use by Designated Personnel to accomodate the seismic data recording equipment, test and repair equipment, spare parts and units. as well as other equipment specified in the Protocol.

6. Site diagrams for each of the three Designated Seismic Stations in the Soviet Union are given in Figures 1-3.

(a) Figure 1 shows the site plan for the Obninsk Designated Seismic Station and indicates the locations of the existing seismic sensor and data recording facilities and the proposed locations of the facilities for the installation and operation of the seismic equipment of the U.S. Side.

(b) Figure 2 shows the site plan for the Arti Designated Seismic Station and indicates the locations of the existing seismic sensor and data recording facilities and the proposed locations of the facilities for the installation and operation of the seismic equipment of the U.S. Side.

(c) Figure 3 shows the site plan for the Novosibirsk Designated Seismic Station and indicates the locations of the existing seismic sensor and data recording facilities and the proposed locations of the facilities for the installation and operation of the seismic equipment of the U.S. Side.

7. Each of the Designated Seismic Stations, to include the facilities specified in Sections II, III, IV, V and VI, of these requirements, shall have a fence along the perimeter excluding unauthorized personnel and animals from the territory designated for use by the Designated Personnel.

8. In selecting the site of the installation of the seismic equipment, consideration shall be given to the following requirements to the maximum extent possible:

(a) The seismic equipment shall be located as far away as possible from sources of perceptible seismic noise, including tall power line towers, poles, trees, etc.;

(b) The seismic equipment shall not be located in areas of steep slopes or places with a high water table; and

(c) Use by Designated Personnel of existing facilities on the territory of the Designated Seismic Stations is authorized, provided that the specifications set forth in the Protocol and these requirements are met. Otherwise, new facilities shall be constructed at the Designated Seismic Stations to meet these specifications.

9. After the specifications set forth in these requirements are finalized, they shall be approved by both Parties. The Soviet side shall prepare construction blueprints and detailed design drawings suitable for use in the construction of facilities specified in these requirements for use by Designated Personnel at each Designated Seismic Station. As specified in the Protocol, construction and provision of any of these facilities to the Designated Personnel shall only be carried out if requested by the U.S. Side.

SECTION II: CONSTRUCTION OF THE VAULT FACILITY

1. The seismic equipment vault facility shall be built according to the following specifications:

(a) The vault shall have a single entrance. This entrance shall be secured by a solid door which can be locked by Designated Personnel on the exterior side by padlocks. The minimum dimensions of the exterior entrance and the door shall be 100 centimeters wide and 200 centimeters high. The minimum dimensions of the interior entrance shall be 100 centimeters wide and 100 centimeters high;

(b) The minimum interior dimensions of the vault room are 400 centimeters in length, 400 centimeters in width, and 250 centimeters in height;

(c) The vault floor shall be decoupled from the underlying bedrock;

(d) The vault floor shall have a central opening for the installation of the seismometer pier. This central opening and the hole in the compacted fill layer beneath it shall exceed the dimensions of the pier by 2 centimeters, plus or minus 0.5 centimeters, on all sides;

(e) The exterior of the vault shall be isolated from atmospheric and thermal dynamic effects;

(f) Provision shall be made for the safe entrance and exit of the vault for Designated Personnel and their equipment;

(g) The interior of the vault shall be lighted so that a normal laboratory working environment is provided;

(h) Electric power shall be provided by the Soviet side to the interior of the vault. One electric circuit breaker box controlling all electrical wiring in the vault room shall be located inside the vault. Power to the circuit breaker box shall be 220 volt, 50 hertz (Hz) alternating current, with a capacity of at least 20 amperes;

(i) All electric wiring for power and light inside the vault room shall be placed in metal conduits;

(j) Electric power cables and data cables shall enter the vault facility through separate access pipes isolated from one another. All electric power cables shall be installed using standard safety practices. The open ends of the data cable access pipe shall be fitted with protective rubber enviromental covers through which the data cables pass. The pipes through which the data cables are inserted shall have an inside diameter of 10 centimeters, plus or minus 5 centimeters;

(k) The interior of the vault facility shall have the least possible fluctuation of temperature during the period when seismic instruments are installed. The ambient temperature in the vault shall remain between -10 degrees Celsius and +40 degrees Celsius without artificial heating or cooling. In extreme necessity, when seasonal temperatures vary greatly, electrical heating with automatic thermal control may be installed. Fluctuations in the temperature in the immediate vicinity of the pier shall not exceed 1 degree Celsius per hour;

(l) No fans, or other sources of vibration shall be installed in the vault; and

(m) The exterior of the vault shall be sealed with a waterproofing material so that the interior of the vault remains dry. Condensation moisture in the interior of the vault shall be reduced by means of moisture absorbing materials. Any water seepage, or condensation, into the vault shall not exceed 0.01 liter/hour.

2. Typical examples of facilities which meet the requirements specified in Paragraph 1 of this Section are shown in Figures numbered 4, 5, 6, 7, and 8:

(a) Figure 4 shows a side view of a vault facility. The facility consists of three parts: an entrance with a solid door and pipes for placement of electrical power cables and seismograph system data cables; a pier for the placement of seismic instruments which is structurally isolated from the vault; and the working area inside the vault;

(b) Figure 5 shows the view from the other side;

(c) Figure 6 provides a top view of the main vault room;

(d) Figure 7 provides a top view of the vault entrance with the outer solid door removed; and

(e) Figure 8 provides a top view of the secure outer entrance.

SECTION III: CONSTRUCTION OF THE SEISMIC INSTRUMENTATION PIER

1. The seismic instrumentation pier shall be built according to two general designs: either Design A or Design B. The choice of Design A or Design B shall be governed by the local conditions at the sites and shall be the decision of the Soviet side after consultation with the U.S. side.

(a) In the Design A type of pier, the pier is imbedded a minimum of 35 centimeters into the bedrock underlying the floor of the vault;

(b) In the Design B type of pier, the pier is constructed directly on the top surface of the bedrock, and is anchored securely to the bedrock by solid steel metal rods driven into the bedrock; and

(c) All specifications (dimensions of the pier, type of concrete, isolation from the concrete vault floor etc.) of the Type A pier are the same as for the Type B pier. These specifications are set forth in Paragraph 2 of this Section.

2. The following specifications apply to the construction of the seismic instrument pier:

(a) The pier shall be installed on bedrock, preferably hard rock, and below any low-velocity weathered zone;

(b) The pier shall be solid and constructed of fine-grained homogeneous concrete. The finished concrete pier shall have a minimum strength rating of 200 kilograms/centimeters^2. Reinforced concrete shall not be used in the construction of the pier. Cementing of the surface of the pier shall not be permitted;

(c) The length of the finished pier shall be a minimum of 200 centimeters. The minimum width of the finished pier shall be 100 centimeters. The top surface of the finished pier shall be at a level of 70 centimeters, plus or minus 10 centimeters, from the floor of the vault;

(d) The top surface of the pier shall be unpolished, smooth and planar. The top surface shall be uniformly level to within 2 degrees of a horizontal plane;

(e) No explosives of any kind shall be used during the excavation of the hole into the bedrock, or during the cleaning of the bedrock surfaces. All excavation, shaping, and cleaning of the bedrock surfaces shall be done with mechanical tools only;

(f) The sides of the instrument pier shall be seismically decoupled from the concrete vault floor and compact fill underlying the floor. The gap between the pier sides and the concrete floor of the vault (including the underlying compacted soil layer) shall be filled by a waterproof flexible sealant; and

(g) The direction of the North meridian shall be indicated, in a solidly fixed manner, on the upper surface of the pier and located at the center of the pier. This direction shall be fixed with an accuracy of 1 degree. The direction of the North meridian from the center of the pier shall also be fixed on the wall of the vault facility.

3. A general description of the Design A type instrument pier is given in Figures 9, 10, and 11. These figures provide side views and a three-dimensional view of the seismometer pier.

4. A general description of the Design B type instrument pier is given in Figures 12, 13, 14, and 15. There figures provide side views and a three-dimensional view of the seismometer pier.

SECTION IV: CONSTRUCTION OF THE BOREHOLE FACILITY

1. The borehole for installing seismic equipment shall be built in accordance with the following specifications:

(a) If the Designated Seismic Station is equipped with a borehole and a vault, the borehole shall be located within 20 meters of the vault facility or inside of it;

(b) The depth of the borehole shall be a minimum of 20 meters and a maximum of 100 meters, depending on the local conditions and unless otherwise agreed by the Parties. The decision on the final depth, within this range of depths, shall be made by the Soviet side after consultation with the U.S. side;

(c) The borehole shall be drilled vertically. The maximum deviation from the vertical shall not exceed 3 degrees;

(d) The borehole shall be cased along its entire length and:

(i) The internal diameter of the borehole casing pipe shall be no less than 230 millimeters and no greater than 240 millimeters;

(ii) The thickness of the borehole casing pipe shall be no less than 4.5 millimeters;

(iii) The casing pipe shall be grouted with concrete to the surrounding bedrock along the entire length of the borehole. The strength of the concrete used shall be at least 200 kilograms/centimeters^2;

(iv) The inner surface of the casing shall be smooth and without obstacles; and

(v) The final internal and external diameters of the borehole casing will be transmitted to the U.S. side after its installation;

(e) The bottom of the borehole shall be plugged; and

(f) The borehole shall be dry and waterproof.

2. The casing pipe shall protrude by approximately 60 centimeters above the level of the pad specified in Paragraph 3 of this Section.

3. The borehole entrance shall be equipped with a level concrete pad. The size of this pad shall be 3 meters by 3 meters and shall be centered on the borehole entrance. This pad shall be decoupled from the borehole casing. The area around the pad shall be provided with adequate lighting to allow normal work at night or in dark conditions.

4. A cable conduit, specified in Section V of these requirements, shall have a termination point near the edge of the pad specified in Paragraph 3 of this Section. The termination point of the cable conduit shall be located at a height of approximately 25 centimeters above the pad and shall be designed to protect the interior of the cable conduit from the environment and shall allow the cables from the borehole seismometer to pass through to the cable conduit. Figure 16 shows an example cable conduit termination.

5. Electric power will be provided by the Soviet side to the borehole facility. The power outlets shall be in a weatherproof box located on the pad. The capacity of the circuit will be 50 Hz alternating current at 220 volts and at least 20 amperes.

6. A general description of the construction of a borehole facility which meets these specifications is given in Figure 16. The winch, hoist, and borehole cover shown in this figure will be supplied by the Designated Personnel.

7. A lightweight environmental shelter, covering the concrete pad, shall be provided to allow the installation, removal, and inspection of equipment during severe weather conditions. This shelter shall be designed so that it can be easily and quickly removed if so requested by the Designated Personnel.

SECTION V: CONSTRUCTION OF THE CABLE CONDUIT AND WALKWAY

1. The cable conduit and walkway shall be built according to the following specifications:

(a) The walkway shall connect in a direct way the data recording and work facility and the entrance to the underground vault facility and/or borehole facility;

(b) There shall be an unobstructed view from the data recording and work facility of the entire length of the cable conduit and walkway, the vault facility, and/or the borehole facility;

(c) The walkway shall be constructed of material suitable for all-weather use;

(d) The walkway shall be well-lighted to allow normal work at night or in dark conditions. Power to the walkway lights shall be controlled by the Designated Personnel from within the data recording and work facility;

(e) For purposes of protection of the cables from the environment, a conduit for cables from the seismic equipment in the vault shall extend from the seismograph system cable access pipe at the vault and/or borehole facility to the cable access pipe at the data recording and work facility. The inner diameter of the conduit shall be a minimum of 5 centimeters. A string or wire will be provided inside the conduit to allow the Designated Personnel to pull their data cables through the length of the conduit. The conduit shall be located above ground, or in a trench, at the option of the Verifying Party; and

(f) Pipe connectors shall be provided to allow the connection of the cable conduit to the cable access pipes at the vault entrance and at the data recording and work facility. These connectors shall provide for protection of the cables from the environment. In the case of a borehole facility, the termination point of the cable conduit shall be built in accordance with paragraph 4 of section IV of these requirements.

SECTION VI: CONSTRUCTION OF THE DATA RECORDING AND WORK FACILITY

1. The data recording and work facility shall have two separate, but connecting, rooms for:

(a) Data recording and equipment checking, and for general administrative work; and

(b) Storage of spare parts, equipment not in current use, and shipping containers for equipment and other items brought to the Designated Seismic Station.

2. The following specifications shall be met:

(a) The data recording room shall be on the ground floor and shall have immediate access to the cable conduit and walkway connecting the data recording and work facility with the vault facility and/or the borehole facility;

(b) The data recording and work facility shall have at least two entrances/exits, one of which shall face the cable conduit and walkway;

(c) The data recording room shall have at least one glass window which is no less than 1 square meter in area. This window shall offer a direct, unobstructed view of the complete cable conduit and walkway and the vault facility and/or the borehole facility;

(d) A cable access pipe shall be installed in the wall of the data recording room so that the cable conduit from the vault and/or the borehole facility can be attached directly to the access pipe allowing the cables from the vault and/or the borehole facility to enter directly the data recording room;

(e) Each room shall have be rectangular and shall have an area of not less than 20 square meters. The minimum length of a wall in each room shall not be less than 4 meters;

(f) Each room shall be heated or air conditioned as necessary to maintain an interior temperature of between 19 degrees Celsius and 27 degrees Celsius;

(g) Power shall be supplied to each room from the local power grid in the form of 220 volts and 50 hertz. The electric circuits to the data recording room for use in connection with the equipment brought by the Designated Personnel shall have at least 40 amperes delivery capacity; and

(h) Each room shall have lighting adequate for work and equipment maintenence.

3. The data recording room shall be furnished with work furniture which includes at least the following:

(a) Two work benches 100 centimeters wide and 200 centimeters long and 100 centimeters high with a load capacity of 200 kilograms each;

(b) Two desks and five chairs; and

(c) Three cabinets for storage of parts and supplies.

4. The data recording room shall be furnished with a telephone which has connections in accordance with the requirements specified in the Protocol, including a connection to the housing facility.

5. A dedicated telephone line shall be installed between the data recording room and the vault facility and/or the borehole facility.

6. The facility shall have a sanitary facility with a minimum of two private toilets and two lavatories. The floor space for the sanitary facility shall be in addition to that designated for the other rooms.

7. A separate facility shall be provided for the storage of materials and substances not appropriate, for requirements of saftey, for storage within the data recording and work facility. The floor space for the storage of these materials shall be in addition to that designated for the other rooms.

SECTION VII: HOUSING FOR DESIGNATED PERSONNEL

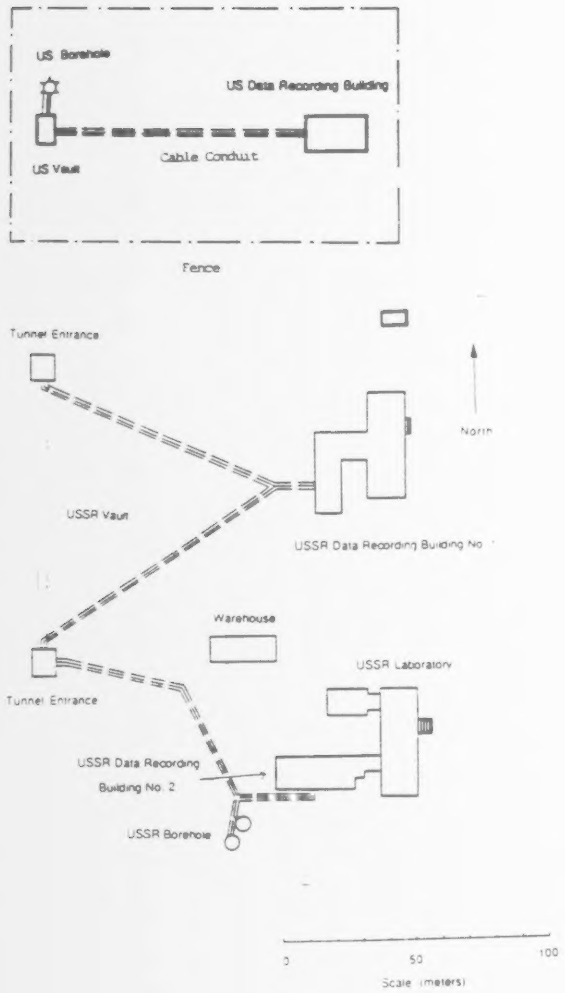
1. Designated Personnel shall be housed in hotel-like accomodations equipped with electrical power, water, telephone and other utilities, including a place for the preparation of hot meals.

2. The housing facilities and the data recording and work facility at the Designated Seismic Stations shall be located so that the vehicle travel time between them is 30 minutes or less.

3. Automobile transportation to and from the Designated Seismic Station shall be provided by the Soviet side.

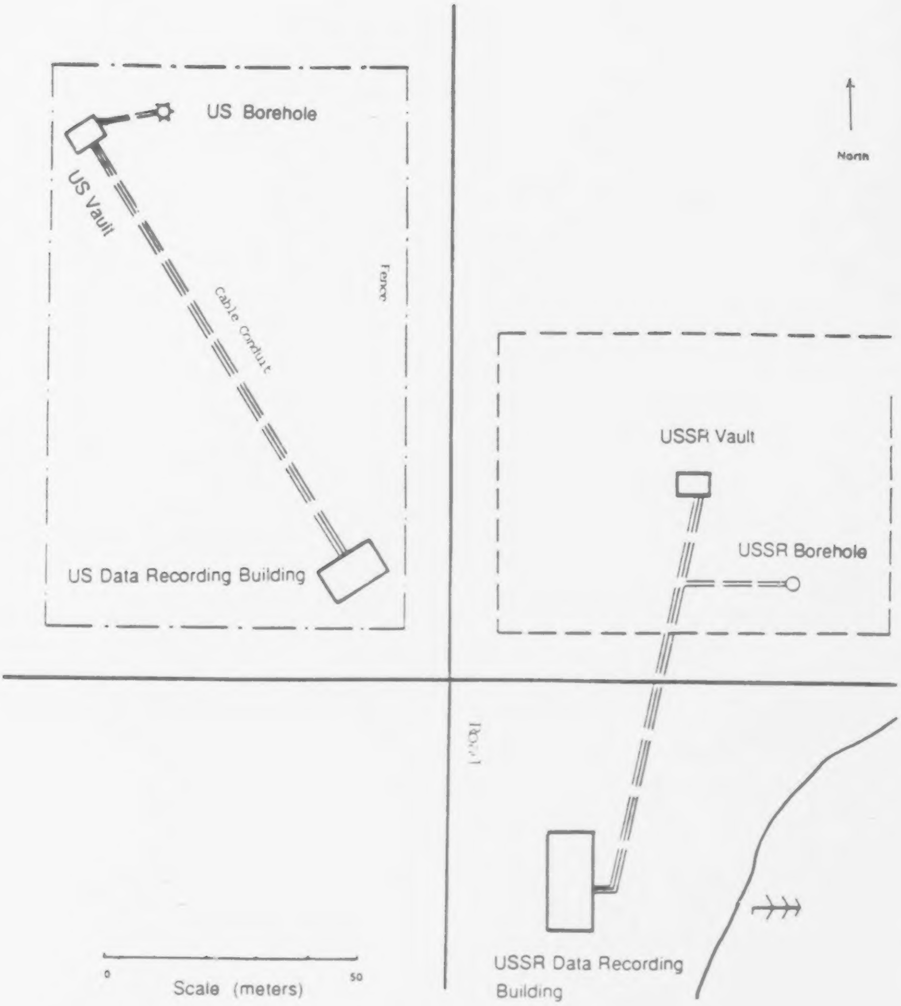
4. The housing accomodations shall be furnished with a telephone which has working connections in accordance with that provided for in the Protocol, including a connection to the data recording room at the Designated Seismic Station.

Figure 1


US Borehole
US Data Recording Building
US Vault
Cable Conduit
Fence
Tunnel Entrance
North
USSR Vault
USSR Data Recording Building No
Warehouse
USSR Laboratory
Tunnel Entrance
USSR Data Recording
Building No. 2
USSR Borehole
0
50
100
Scale (meters)

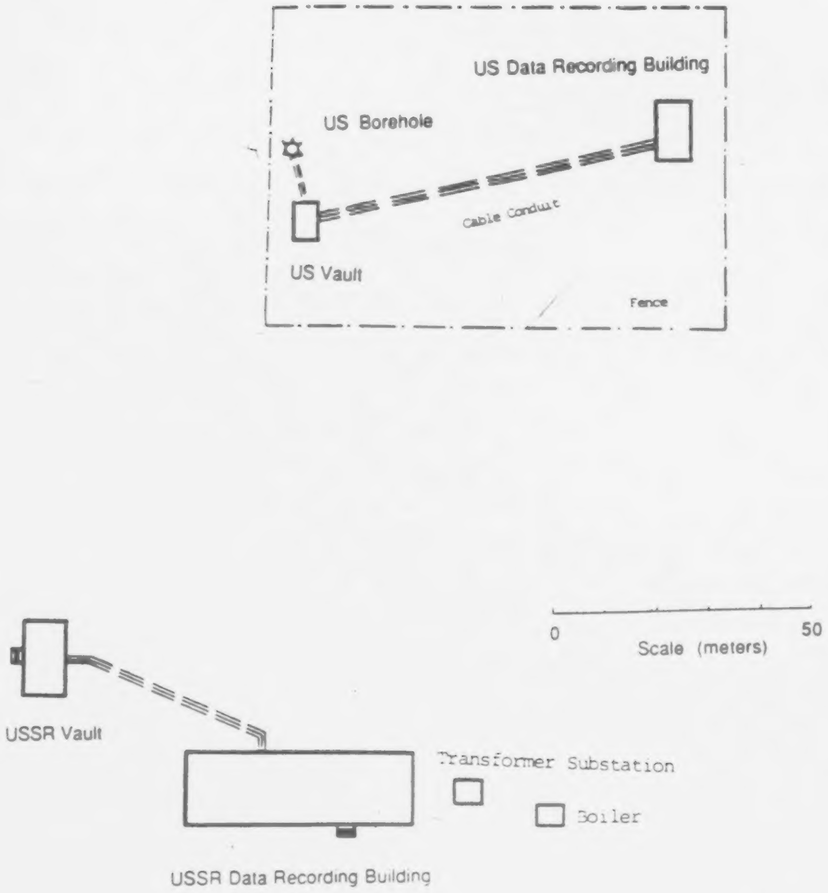
SITE DIAGRAM -- OBNINSK DESIGNATED SEISMIC STATION

Figure 2


US Borehole
US Vault
Cable Conduit
Fence
US Data Recording Building
North
USSR Vault
USSR Borehole
Road
USSR Data Recording Building
0
50
Scale (meters)

SITE DIAGRAM -- ARTI DESIGNATED SEISMIC STATION

Figure 3


US Data Recording Building
US Borehole
Cable Conduit
US Vault
Fence
0
50
Scale (meters)
USSR Vault
Transformer Substation
Boiler
USSR Data Recording Building

SITE DIAGRAM -- NOVOSIBIRSK DESIGNATED SEISMIC STATION

Figure 4

VAULT FACILITY

Side View A

Design A

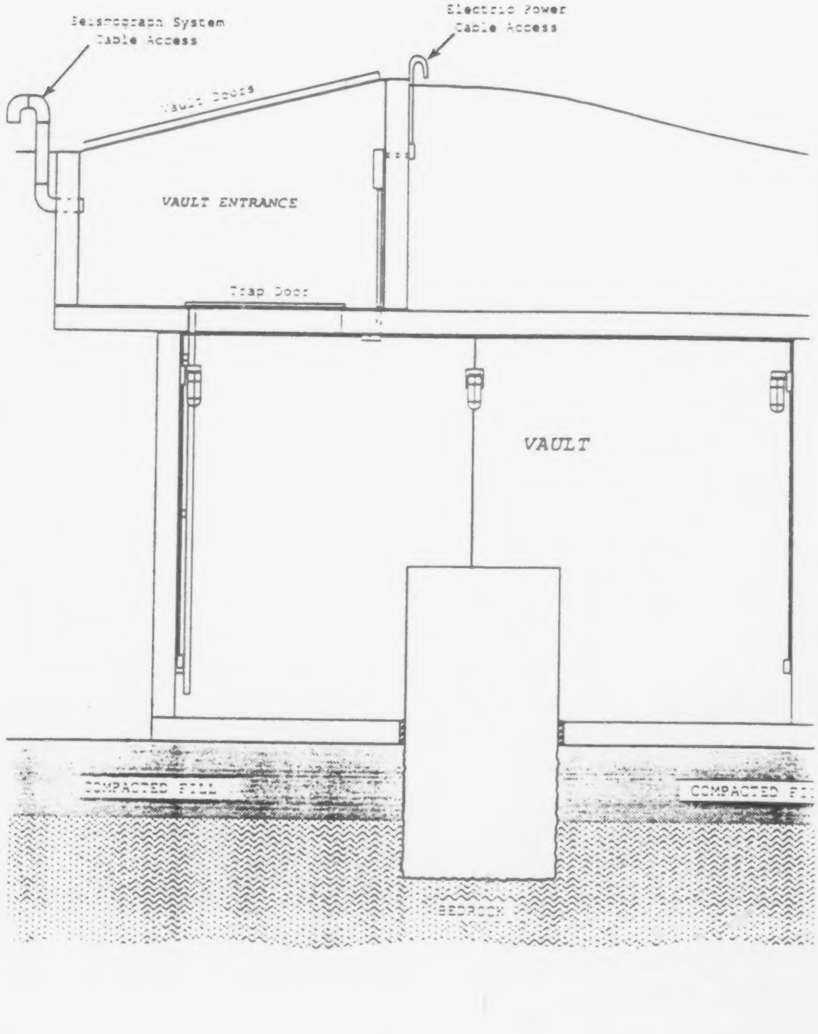

Seismograph System
Cable Access
Electric Power
Cable Access
Vault Doors
VAULT ENTRANCE
Trap Door
VAULT
COMPACTED FILL
COMPACTED FI
BEDROCK

Figure 5

VAULT FACILITY

Side View B

Design A

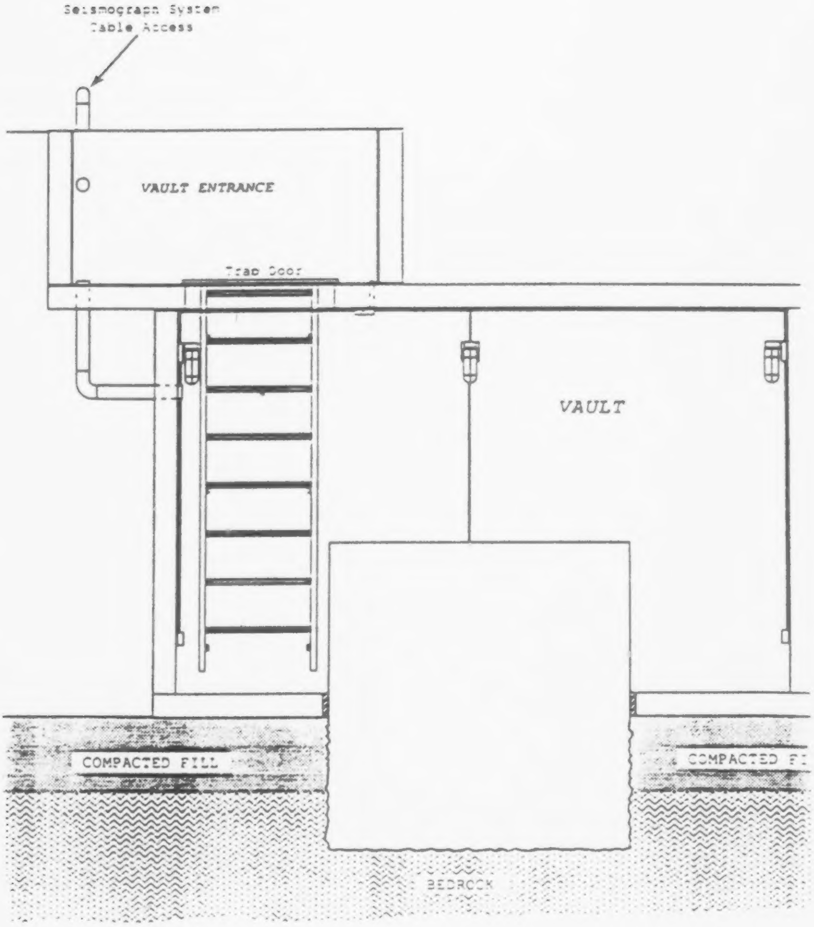

Seismograph System
Cable Access
VAULT ENTRANCE
Trap Door
VAULT
COMPACTED FILL
COMPACTED FI
BEDROCK

Figure 6

VAULT FACILITY

Top View

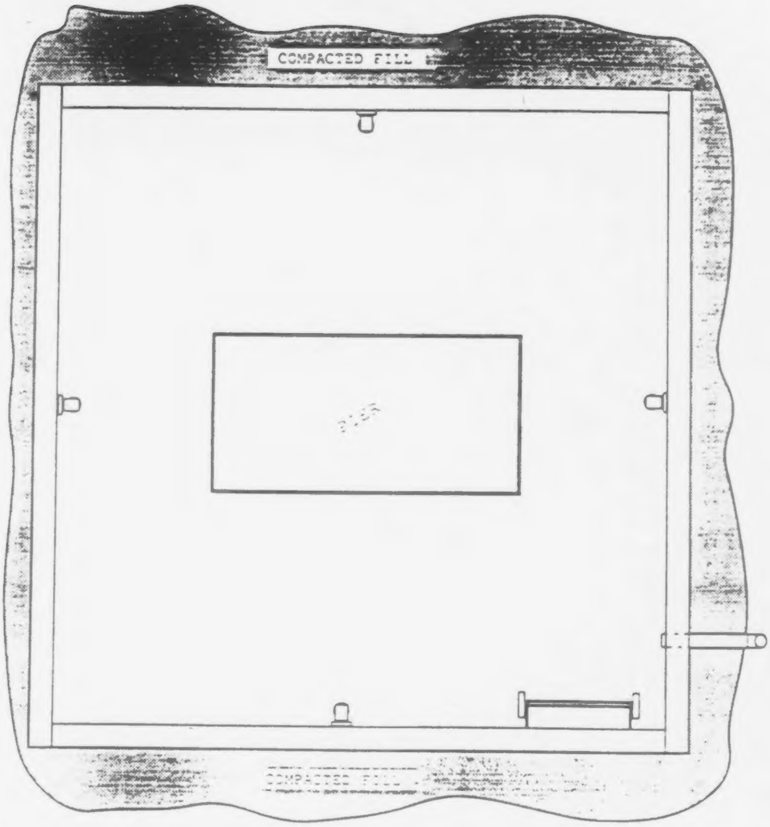

COMPACTED FILL
PIER
COMPACTED FILL

Figure 7

VAULT FACILITY

Top View

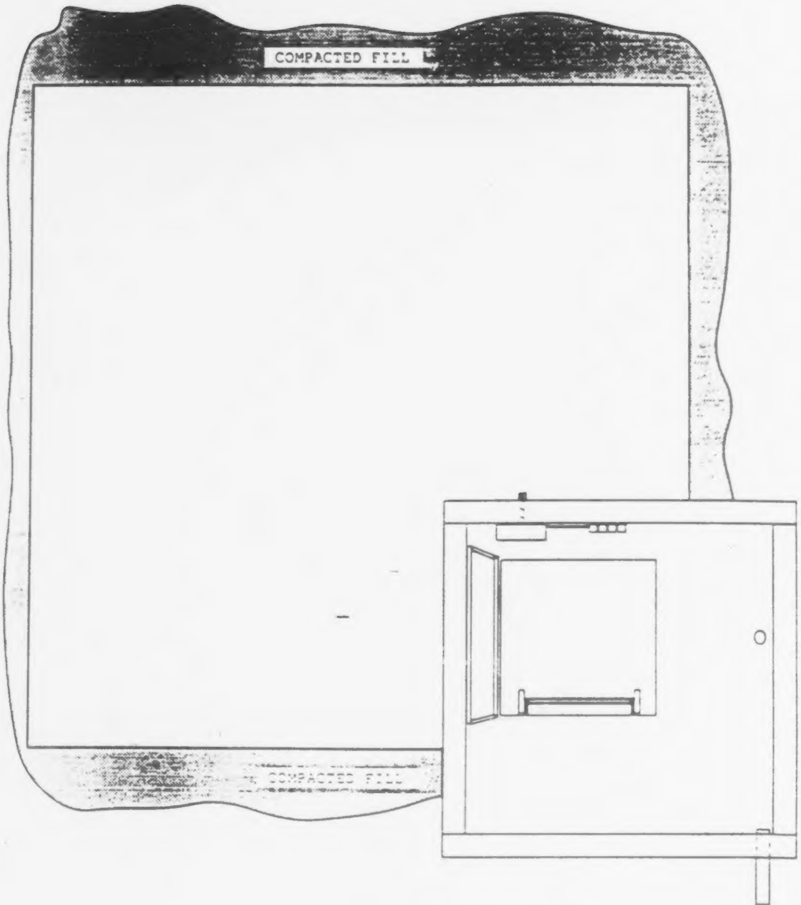

COMPACTED FILL
COMPACTED FILL

Figure 8

VAULT FACILITY

Top View

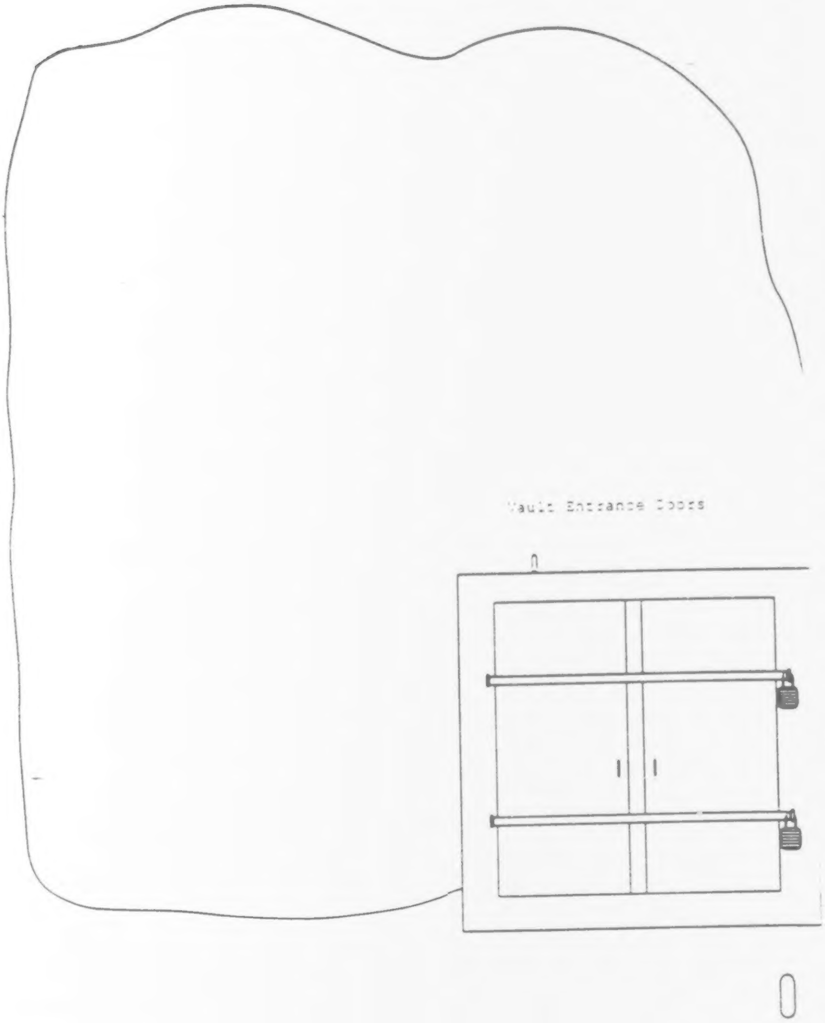

Vault Entrance Doors

Figure 9

SEISMOMETER PIER

Design A
3 Dimensional Side View

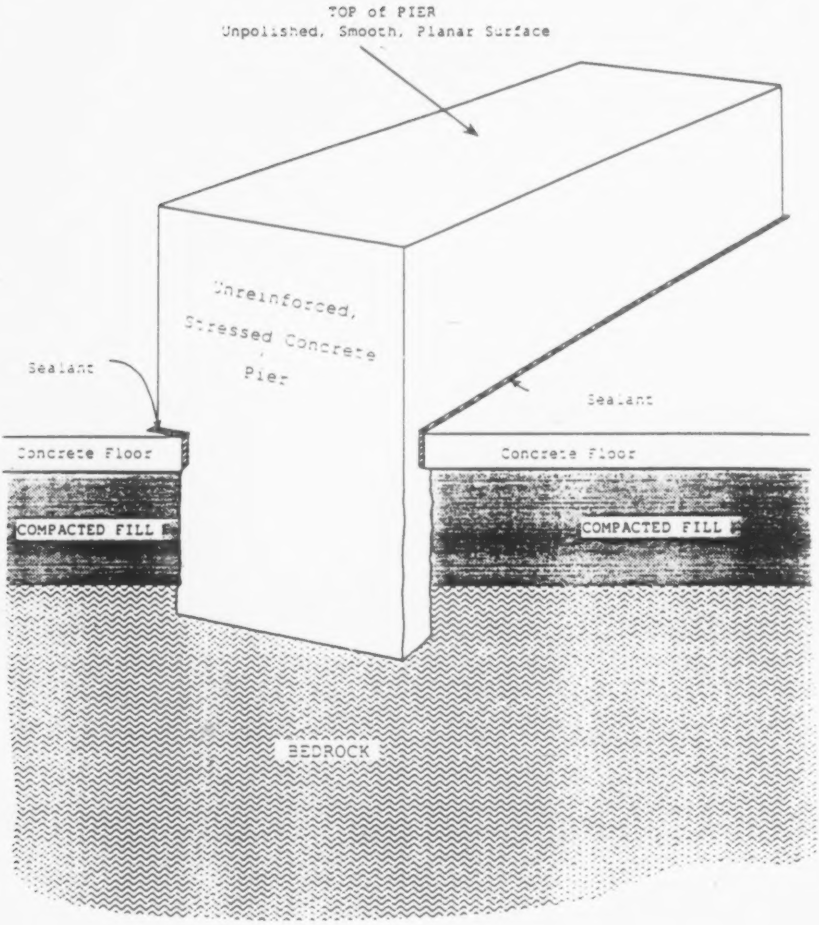

TOP of PIER
Unpolished, Smooth, Planar Surface
Unreinforced,
Stressed Concrete
Pier
Sealant
Sealant
Concrete Floor
Concrete Floor
COMPACTED FILL
COMPACTED FILL
BEDROCK

Figure 10

SEISMOMETER PIER

Design A
Side View A

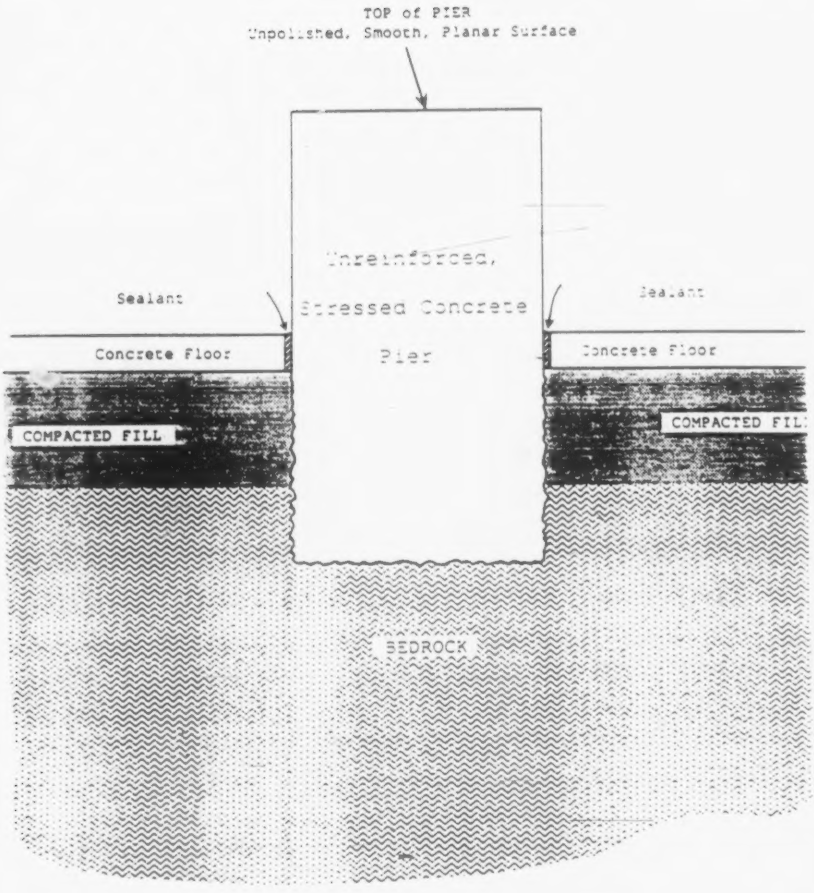

TOP of PIER
Unpolished, Smooth, Planar Surface
Unreinforced,
Stressed Concrete
Pier
Sealant
Sealant
Concrete Floor
Concrete Floor
COMPACTED FILL
COMPACTED FILL
BEDROCK

Figure 11

SEISMOMETER PIER

Design A

Side View B

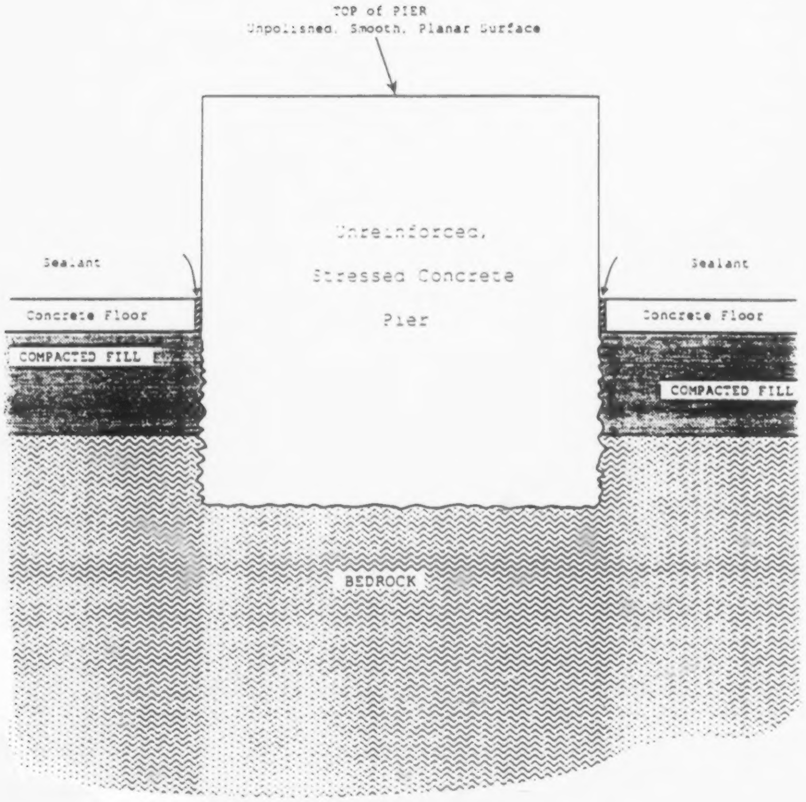

TOP of PIER
Unpolished, Smooth, Planar Surface
Unreinforced,
Stressed Concrete
Pier
Sealant
Sealant
Concrete Floor
Concrete Floor
COMPACTED FILL
COMPACTED FILL
BEDROCK

Figure 12

VAULT FACILITY

Side View A

Design B

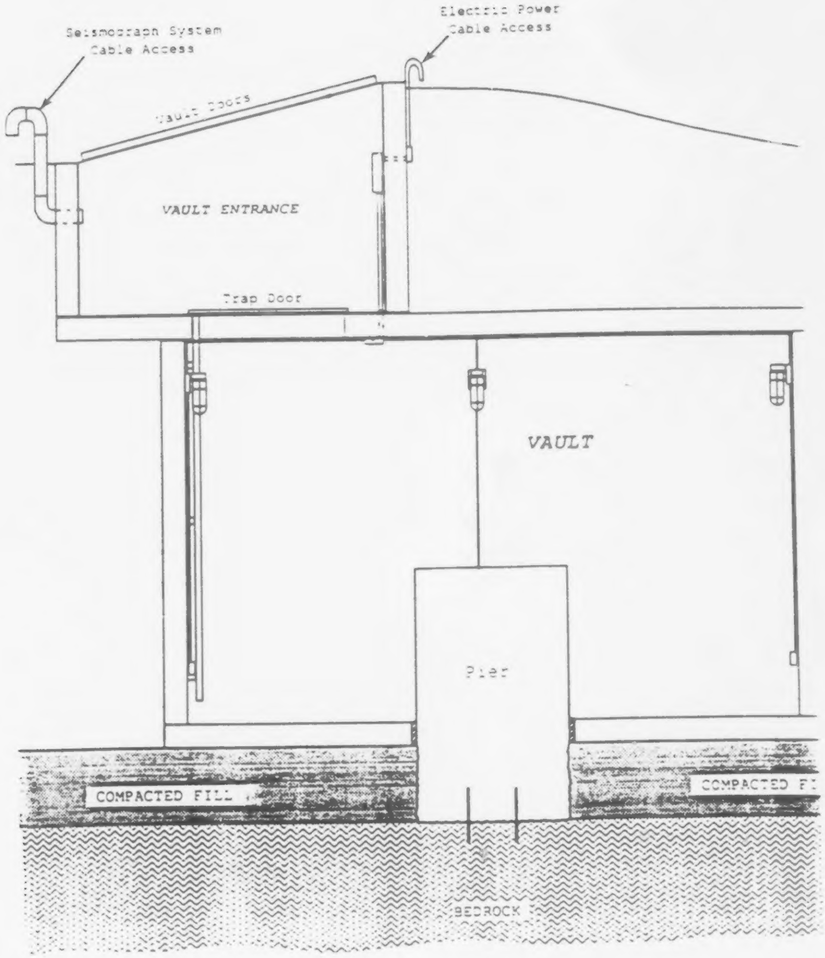

Seismograph System
Cable Access
Electric Power
Cable Access
Vault Doors
VAULT ENTRANCE
Trap Door
VAULT
Pier
COMPACTED FILL
COMPACTED FI
BEDROCK

Figure 13 –

VAULT FACILITY
Side View B
Design B

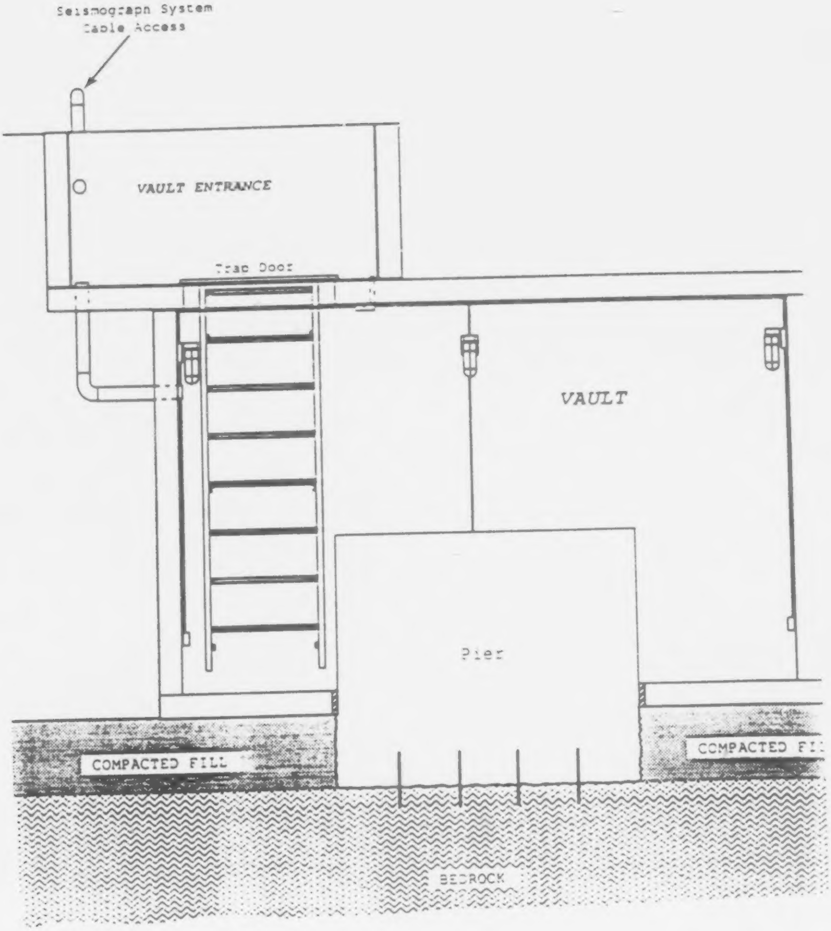

Seismograph System
Cable Access
VAULT ENTRANCE
Trap Door
VAULT
Pier
COMPACTED FILL
COMPACTED FI
BEDROCK

Figure 14

SEISMOMETER PIER

Design B
Side View B-

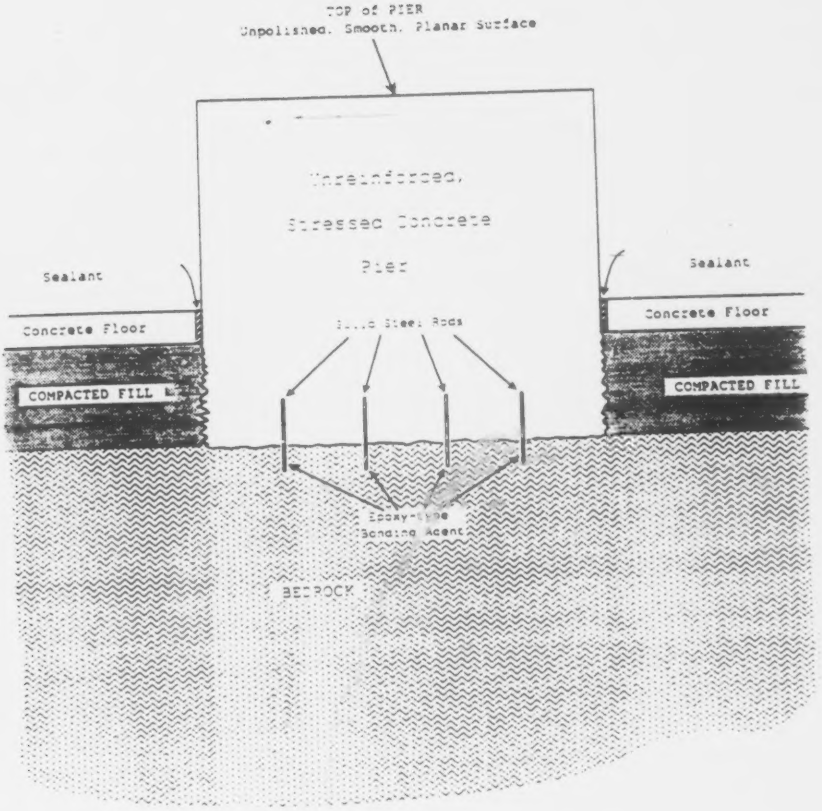

TOP of PIER
Unpolished, Smooth, Planar Surface
Unreinforced,
Stressed Concrete
Pier
Sealant
Sealant
Concrete Floor
Concrete Floor
Solid Steel Rods
COMPACTED FILL
COMPACTED FILL
Epoxy-type
Bonding Agent
BEDROCK

Figure 15

SEISMOMETER PIER

Design B
Side View A

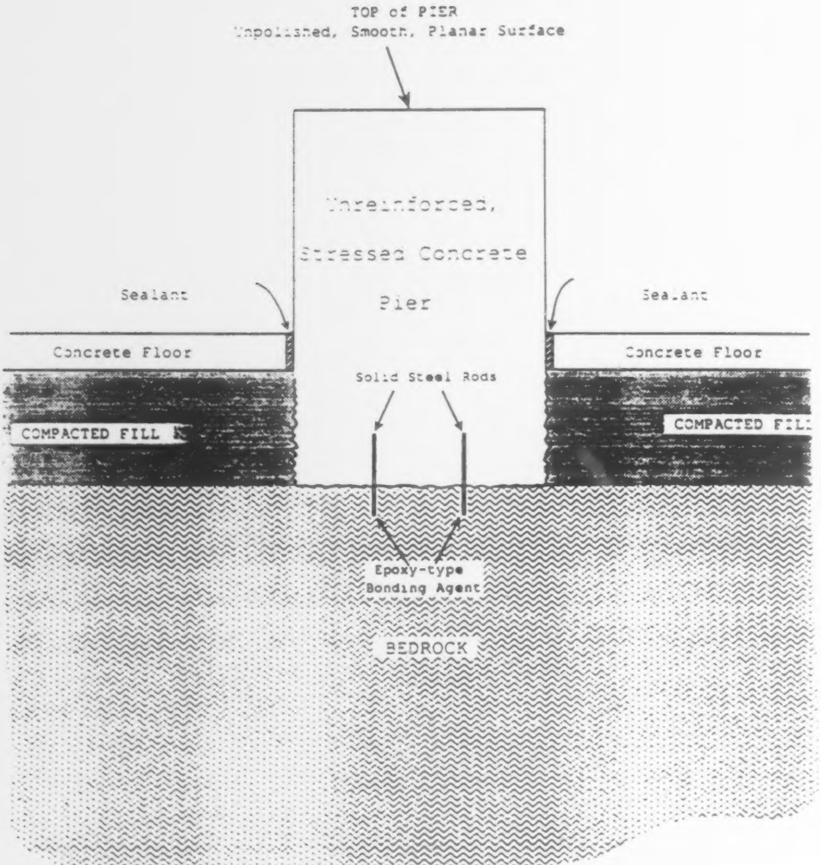
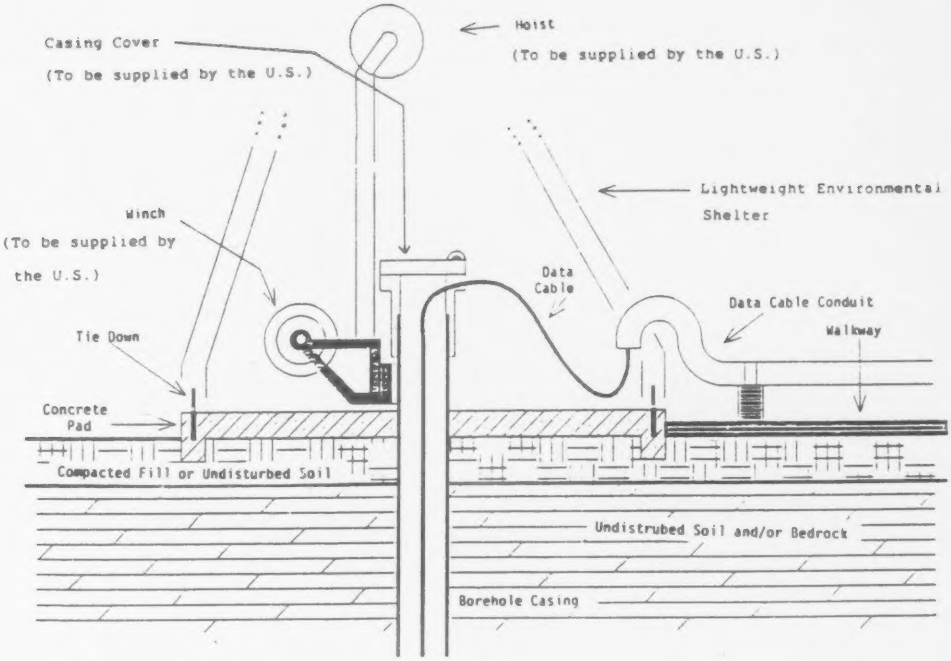

TOP of PIER
Unpolished, Smooth, Planar Surface
Unreinforced, Stressed Concrete Pier
Sealant
Sealant
Concrete Floor
Concrete Floor
Solid Steel Rods
COMPACTED FILL
COMPACTED FIL
Epoxy-type Bonding Agent
BEDROCK

Figure 16


Casing Cover
(To be supplied by the U.S.)
Hoist
(To be supplied by the U.S.)
Lightweight Environmental
Shelter
Winch
(To be supplied by
the U.S.)
Data
Cable
Data Cable Conduit
Walkway
Tie Down
Concrete
Pad
Compacted Fill or Undisturbed Soil
Undistrubed Soil and/or Bedrock
Borehole Casing

May 24, 1990

To the Head of the U.S. Delegation
to the Full Scale Soviet-American
Negotiations on the Limitations and
Cessation of Nuclear Testing,
Ambassador C. Paul Robinson

Esteemed Mr. Robinson,

In preparing for the use of the seismic yield measurement method in accordance with the Protocol to the Treaty Between the Union of Soviet Socialist Republics and the United States of America on the Limitation of Underground Nuclear Weapon Tests, the Soviet side has identified the conditions and technical requirements for the installation and operation of its seismic equipment at the three Designated Seismic Stations identified by the United States of America in the letters exchanged by the Sides in Moscow on February 8, 1990. These conditions and requirements are set forth in the document dated May 9, 1990, entitled "Technical Requirements for the Installation and Operation of Seismic Equipment of the Soviet Side at Designated Seismic Stations of the United States of America." This document is attached to this letter.

The Soviet side has received the document of May 9, 1990, prepared by the U.S. side, entitled "Technical Requirements for the Installation and Operation of Seismic Equipment of the Soviet Side at Designated Seismic Stations of the Union of Soviet Socialist Republics." For purposes of planning and preparation of the implementation for the provisions contained in the protocol, this document is acceptable to the Soviet side.

With respect to the need to prepare the facilities at the Designated Seismic Stations of the Union of Soviet Socialist Republics for use by the U.S. side in exercising its rights under the Protocol, the Soviet side confirms the understanding that this planning and preparation will proceed in three stages.

In the first stage, the Soviet side will prepare construction blueprints and detailed design drawings suitable for use in the construction of facilities that meet the requirements described in the referenced document of the U.S. side. These construction blueprints and design drawings will be made available for examination, discussion, and agreement with the U.S. side on a schedule to be agreed.

In the second stage, to begin within 10 days following entry into force of the Protocol, unless the sides otherwise agree, the U.S. side will request in writing that all or part of the facilities described by the U.S. side in the referenced document be constructed in accordance with the agreed construction blueprints and design drawings. Construction of the requested facilities at the Designated Seismic Stations on the territory of the Union of Soviet Socialist Republics will be completed within 160 days following receipt of the request of the U.S. side, unless otherwise agreed.

In the third stage, to be completed within 20 days following completion of construction of the requested facilities, unless the Parties otherwise agree, it is expected that the Soviet side will host technical experts of the U.S. side on a visit to each of the Designated Seismic Stations in the territory of the Union of Soviet Socialist Republics, for familiarization with the facilites to be provided for use by the U.S. side at the Designated Seismic Stations of the Soviet side.

The Soviet side will be guided by the aforementioned provisions in our subsequent work of preparing and implementing the Protocol.

With respects,

Head of Soviet Delegation of the USSR
to the Full-Scale Soviet-American
Negotiations on the Limitation and
Cessation of Nuclear Tests.

Igor Palenykh

Attachment: "Technical Requirements for the Installation and Operation of Seismic Equipment of the Soviet Side at Designated Seismic Stations of the United States of America," 36 pp.

Technical Requirements
For The Installation And Operation Of
Seismic Equipment of the Soviet Side
At Designated Seismic Stations
# of the United States of America

May 9, 1990

SECTION I: GENERAL REQUIREMENTS

1. In order to install and operate seismic equipment of the Soviet side at the three Designated Seismic Stations located on the territory of the United States of America in accordance with the Protocol to the Treaty Between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Underground Nuclear Weapon Tests, the following facilities may be needed at each of the Designated Seismic Stations:

(a) A vault facility;

(b) A borehole facility;

(c) A cable conduit and walkway;

(d) A data recording and work facility;

(e) Living facilities for Designated Personnel.

2. The vault facility, specified in Section II of these requirements, and the borehole facility, specified in Section IV of these requirements, shall be situated not less than 75 meters and not more than 125 meters from the data recording and work facility, specified in Section VI of these requirements, unless otherwise agreed by the Parties.

3. The seismic equipment pier, located in the vault facility, specified in Section III of these requirements, and/or the borehole facility, specified in Section IV of these requirements, shall be located no closer than 100 meters and not more than 200 meters from the location of the seismic equipment existing at the Designated Seismic Station, unless otherwise agreed by the Parties.

4. The cable conduit and walkway, specified in Section V of these requirements, shall connect the data recording and work facility with the underground vault facility and/or the borehole facility.

5. A facility, specified in Section VI of these requirements, shall be provided for the exclusive use by Designated Personnel to accomodate the seismic data recording equipment, test and repair equipment, spare parts and units, as well as other equipment specified in the Protocol.

6. Site diagrams for each of the three Designated Seismic Stations in the United States are given in Figures 1-3.

(a) Figure 1 shows the site plan for the Newport, Washington Designated Seismic Station and indicates the locations of the existing seismic sensor and data recording facilities and the proposed locations of the facilities for the installation and operation of the seismic equipment of the Soviet side.

(b) Figure 2 shows the site plan for the Black Hills, South Dakota Designated Seismic Station and indicates the locations of the existing seismic sensor and data recording facilities and the proposed locations of the facilities for the installation and operation of the seismic equipment of the Soviet side.

(c) Figure 3 shows the site plan for the Tulsa, Oklahoma Designated Seismic Station and indicates the locations of the existing seismic sensor and data recording facilities and the proposed locations of the facilities for the installation and operation of the seismic equipment of the Soviet side.

7. Each of the Designated Seismic Stations, to include the facilities specified in Sections II, III, IV, V and VI, of these requirements, shall have a fence along the perimeter excluding unauthorized personnel and animals from the territory designated for use by the Designated Personnel.

8. In selecting the site of the installation of the seismic equipment, consideration shall be given to the following requirements to the maximum extent possible:

(a) The seismic equipment shall be located as far away as possible from sources of perceptible seismic noise, including tall power line towers, poles, trees, etc.;

(b) The seismic equipment shall not be located in areas of steep slopes or places with a high water table; and

(c) Use by Designated Personnel of existing facilities on the territory of the Designated Seismic Stations is authorized, provided that the specifications set forth in the Protocol and these requirements are met. Otherwise, new facilities shall be constructed at the Designated Seismic Stations to meet these specifications.

9. After the specifications set forth in these requirements are finalized, they shall be approved by both Parties. The U.S. side shall prepare construction blueprints and detailed design drawings suitable for use in the construction of facilities specified in these requirements for use by Designated Personnel at each Designated Seismic Station. As specified in the Protocol, construction and provision of any of these facilities to the Designated Personnel shall only be carried out if requested by the Soviet side.

SECTION II: CONSTRUCTION OF THE VAULT FACILITY

1. The seismic equipment vault facility shall be built according to the following specifications:

(a) The vault shall have a single entrance. This entrance shall be secured by a solid door which can be locked by Designated Personnel on the exterior side by padlocks. The minimum dimensions of the exterior entrance and the door shall be 100 centimeters wide and 200 centimeters high. The minimum dimensions of the interior entrance shall be 100 centimeters wide and 100 centimeters high;

(b) The minimum interior dimensions of the vault room are 400 centimeters in length, 400 centimeters in width, and 250 centimeters in height;

(c) The vault floor shall be decoupled from the underlying bedrock;

(d) The vault floor shall have a central opening for the installation of the seismometer pier. This central opening and the hole in the compacted fill layer beneath it shall exceed the dimensions of the pier by 2 centimeters, plus or minus 0.5 centimeters, on all sides;

(e) The exterior of the vault shall be isolated from atmospheric and thermal dynamic effects;

(f) Provision shall be made for the safe entrance and exit of the vault for Designated Personnel and their equipment;

(g) The interior of the vault shall be lighted so that a normal laboratory working environment is provided;

(h) Electric power shall be provided by the U.S. side to the interior of the vault. One electric circuit breaker box controlling all electrical wiring in the vault room shall be located inside the vault. Power to the circuit breaker box shall be 220 volt, 50 hertz (Hz) alternating current, with a capacity of at least 20 amperes;

(i) All electric wiring for power and light inside the vault room shall be placed in metal conduits;

(j) Electric power cables and data cables shall enter the vault facility through separate access pipes isolated from one another. All electric power cables shall be installed using standard safety practices. The open ends of the data cable access pipe shall be fitted with protective rubber enviromental covers through which the data cables pass. The pipes through which the data cables are inserted shall have an inside diameter of 10 centimeters, plus or minus 5 centimeters;

(k) The interior of the vault facility shall have the least possible fluctuation of temperature during the period when seismic instruments are installed. The ambient temperature in the vault shall remain between -10 degrees Celsius and +40 degrees Celsius without artificial heating or cooling. In extreme necessity, when seasonal temperatures vary greatly, electrical heating with automatic thermal control may be installed. Fluctuations in the temperature in the immediate vicinity of the pier shall not exceed 1 degree Celsius per hour;

(l) No fans, or other sources of vibration shall be installed in the vault; and

(m) The exterior of the vault shall be sealed with a waterproofing material so that the interior of the vault remains dry. Condensation moisture in the interior of the vault shall be reduced by means of moisture absorbing materials. Any water seepage, or condensation, into the vault shall not exceed 0.01 liter/hour.

2. Typical examples of facilities which meet the requirements specified in Paragraph 1 of this Section are shown in Figures numbered 4, 5, 6, 7, and 8:

(a) Figure 4 shows a side view of a vault facility. The facility consists of three parts: an entrance with a solid door and pipes for placement of electrical power cables and seismograph system data cables; a pier for the placement of seismic instruments which is structurally isolated from the vault; and the working area inside the vault;

(b) Figure 5 shows the view from the other side;

(c) Figure 6 provides a top view of the main vault room;

(d) Figure 7 provides a top view of the vault entrance with the outer solid door removed; and

(e) Figure 8 provides a top view of the secure outer entrance.

SECTION III: CONSTRUCTION OF THE SEISMIC INSTRUMENTATION PIER

1. The seismic instrumentation pier shall be built according to two general designs: either Design A or Design B. The choice of Design A or Design B shall be governed by the local conditions at the sites and shall be the decision of the U.S. side after consultation with the Soviet side.

(a) In the Design A type of pier, the pier is imbedded a minimum of 35 centimeters into the bedrock underlying the floor of the vault;

(b) In the Design B type of pier, the pier is constructed directly on the top surface of the bedrock, and is anchored securely to the bedrock by solid steel metal rods driven into the bedrock; and

(c) All specifications (dimensions of the pier, type of concrete, isolation from the concrete vault floor etc.) of the Type A pier are the same as for the Type B pier. These specifications are set forth in Paragraph 2 of this Section.

2. The following specifications apply to the construction of the seismic instrument pier:

(a) The pier shall be installed on bedrock, preferably hard rock, and below any low-velocity weathered zone;

(b) The pier shall be solid and constructed of fine-grained homogeneous concrete. The finished concrete pier shall have a minimum strength rating of 200 kilograms/centimeters^2. Reinforced concrete shall not be used in the construction of the pier. Cementing of the surface of the pier shall not be permitted;

(c) The length of the finished pier shall be a minimum of 200 centimeters. The minimum width of the finished pier shall be 100 centimeters. The top surface of the finished pier shall be at a level of 70 centimeters, plus or minus 10 centimeters, from the floor of the vault;

(d) The top surface of the pier shall be unpolished, smooth and planar. The top surface shall be uniformly level to within 2 degrees of a horizontal plane;

(e) No explosives of any kind shall be used during the excavation of the hole into the bedrock, or during the cleaning of the bedrock surfaces. All excavation, shaping, and cleaning of the bedrock surfaces shall be done with mechanical tools only;

(f) The sides of the instrument pier shall be seismically decoupled from the concrete vault floor and compact fill underlying the floor. The gap between the pier sides and the concrete floor of the vault (including the underlying compacted soil layer) shall be filled by a waterproof flexible sealant; and

(g) The direction of the North meridian shall be indicated, in a solidly fixed manner, on the upper surface of the pier and located at the center of the pier. This direction shall be fixed with an accuracy of 1 degree. The direction of the North meridian from the center of the pier shall also be fixed on the wall of the vault facility.

3. A general description of the Design A type instrument pier is given in Figures 9, 10, and 11. These figures provide side views and a three-dimensional view of the seismometer pier.

4. A general description of the Design B type instrument pier is given in Figures 12, 13, 14, and 15. These figures provide side views and a three-dimensional view of the seismometer pier.

SECTION IV: CONSTRUCTION OF THE BOREHOLE FACILITY

1. The borehole for installing seismic equipment shall be built in accordance with the following specifications:

(a) If the Designated Seismic Station is equipped with a borehole and a vault, the borehole shall be located within 20 meters of the vault facility or inside of it;

(b) The depth of the borehole shall be a minimum of 20 meters and a maximum of 100 meters, depending on the local conditions and unless otherwise agreed by the Parties. The decision on the final depth, within this range of depths, shall be made by the U.S. side after consultation with the Soviet side;

(c) The borehole shall be drilled vertically. The maximum deviation from the vertical shall not exceed 3 degrees;

(d) The borehole shall be cased along its entire length and:

(i) The internal diameter of the borehole casing pipe shall be no less than 295 millimeters and no greater than 310 millimeters;

(ii) The thickness of the borehole casing pipe shall be no less than 4.5 millimeters;

(iii) The casing pipe shall be grouted with concrete to the surrounding bedrock along the entire length of the borehole. The strength of the concrete used shall be at least 200 kilograms/centimeters^2;

(iv) The inner surface of the casing shall be smooth and without obstacles; and

(v) The final internal and external diameters of the borehole casing will be transmitted to the Soviet side after its installation;

(e) The bottom of the borehole shall be plugged; and

(f) The borehole shall be dry and waterproof.

2. The casing pipe shall protrude by approximately 60 centimeters above the level of the pad specified in Paragraph 3 of this Section.

3. The borehole entrance shall be equipped with a level concrete pad. The size of this pad shall be 3 meters by 3 meters and shall be centered on the borehole entrance. This pad shall be decoupled from the borehole casing. The area around the pad shall be provided with adequate lighting to allow normal work at night or in dark conditions.

4. A cable conduit, specified in Section V of these requirements, shall have a termination point near the edge of the pad specified in Paragraph 3 of this Section. The termination point of the cable conduit shall be located at a height of approximately 25 centimeters above the pad and shall be designed to protect the interior of the cable conduit from the environment and shall allow the cables from the borehole seismometer to pass through to the cable conduit. Figure 16 shows an example cable conduit termination.

5. Electric power will be provided by the U.S. side to the borehole facility. The power outlets shall be in a weatherproof box located on the pad. The capacity of the circuit will be 50 Hz alternating current at 220 volts and at least 20 amperes.

6. A general description of the construction of a borehole facility which meets these specifications is given in Figure 16. The winch, hoist, and borehole cover shown in this figure will be supplied by the Designated Personnel.

7. A lightweight environmental shelter, covering the concrete pad, shall be provided to allow the installation, removal, and inspection of equipment during severe weather conditions. This shelter shall be designed so that it can be easily and quickly removed if so requested by the Designated Personnel.

SECTION V: CONSTRUCTION OF THE CABLE CONDUIT AND WALKWAY

1. The cable conduit and walkway shall be built according to the following specifications:

(a) The walkway shall connect in a direct way the data recording and work facility and the entrance to the underground vault facility and/or borehole facility;

(b) There shall be an unobstructed view from the data recording and work facility of the entire length of the cable conduit and walkway, the vault facility, and/or the borehole facility;

(c) The walkway shall be constructed of material suitable for all-weather use;

(d) The walkway shall be well-lighted to allow normal work at night or in dark conditions. Power to the walkway lights shall be controlled by the Designated Personnel from within the data recording and work facility;

(e) For purposes of protection of the cables from the environment, a conduit for cables from the seismic equipment in the vault shall extend from the seismograph system cable access pipe at the vault and/or borehole facility to the cable access pipe at the data recording and work facility. The inner diameter of the conduit shall be a minimum of 5 centimeters. A string or wire will be provided inside the conduit to allow the Designated Personnel to pull their data cables through the length of the conduit. The conduit shall be located above ground, or in a trench, at the option of the Verifying Party; and

(f) Pipe connectors shall be provided to allow the connection of the cable conduit to the cable access pipes at the vault entrance and at the data recording and work facility. These connectors shall provide for protection of the cables from the environment. In the case of a borehole facility, the termination point of the cable conduit shall be built in accordance with paragraph 4 of section IV of these requirements.

SECTION VI: CONSTRUCTION OF THE DATA RECORDING AND WORK FACILITY

1. The data recording and work facility shall have two separate, but connecting, rooms for:

(a) Data recording and equipment checking, and for general administrative work; and

(b) Storage of spare parts, equipment not in current use, and shipping containers for equipment and other items brought to the Designated Seismic Station.

2. The following specifications shall be met:

(a) The data recording room shall be on the ground floor and shall have immediate access to the cable conduit and walkway connecting the data recording and work facility with the vault facility and/or the borehole facility;

(b) The data recording and work facility shall have at least two entrances/exits, one of which shall face the cable conduit and walkway;

(c) The data recording room shall have at least one glass window which is no less than 1 square meter in area. This window shall offer a direct, unobstructed view of the complete cable conduit and walkway and the vault facility and/or the borehole facility;

(d) A cable access pipe shall be installed in the wall of the data recording room so that the cable conduit from the vault and/or the borehole facility can be attached directly to the access pipe allowing the cables from the vault and/or the borehole facility to enter directly the data recording room;

(e) Each room shall have be rectangular and shall have an area of not less than 20 square meters. The minimum length of a wall in each room shall not be less than 4 meters;

(f) Each room shall be heated or air conditioned as necessary to maintain an interior temperature of between 19 degrees Celsius and 27 degrees Celsius;

(g) Power shall be supplied to each room from the local power grid in the form of 220 volts and 50 hertz. The electric circuits to the data recording room for use in connection with the equipment brought by the Designated Personnel shall have at least 40 amperes delivery capacity; and

(h) Each room shall have lighting adequate for work and equipment maintenence.

3. The data recording room shall be furnished with work furniture which includes at least the following:

(a) Two work benches 100 centimeters wide and 200 centimeters long and 100 centimeters high with a load capacity of 200 kilograms each;

(b) Two desks and five chairs; and

(c) Three cabinets for storage of parts and supplies.

4. The data recording room shall be furnished with a telephone which has connections in accordance with the requirements specified in the Protocol, including a connection to the housing facility.

5. A dedicated telephone line shall be installed between the data recording room and the vault facility and/or the borehole facility.

6. The facility shall have a sanitary facility with a minimum of two private toilets and two lavatories. The floor space for the sanitary facility shall be in addition to that designated for the other rooms.

7. A separate facility shall be provided for the storage of materials and substances not appropriate, for requirements of saftey, for storage within the data recording and work facility. The floor space for the storage of these materials shall be in addition to that designated for the other rooms.

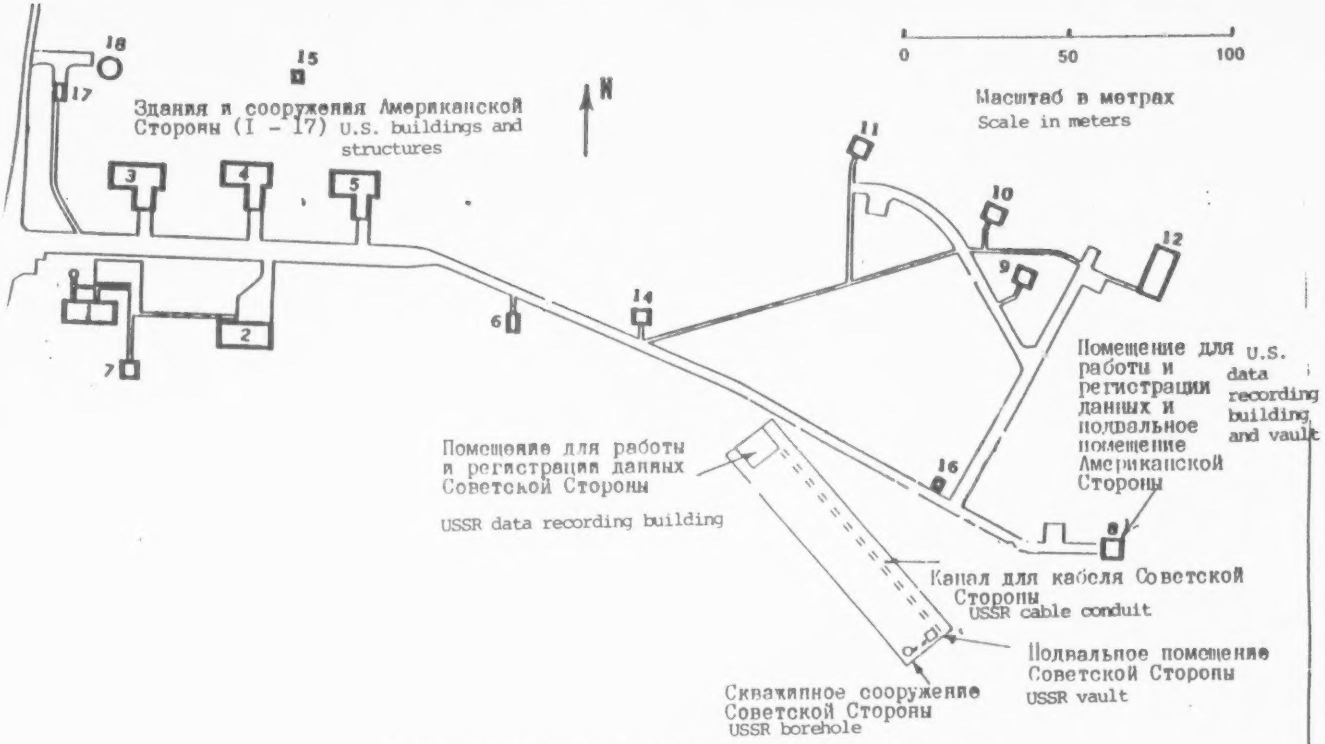
SECTION VII: HOUSING FOR DESIGNATED PERSONNEL

1. Designated Personnel shall be housed in hotel-like accomodations equipped with electrical power, water, telephone and other utilities, including a place for the preparation of hot meals.

2. The housing facilities and the data recording and work facility at the Designated Seismic Stations shall be located so that the vehicle travel time between them is 30 minutes or less.

3. Automobile transportation to and from the Designated Seismic Station shall be provided by the U.S. side.

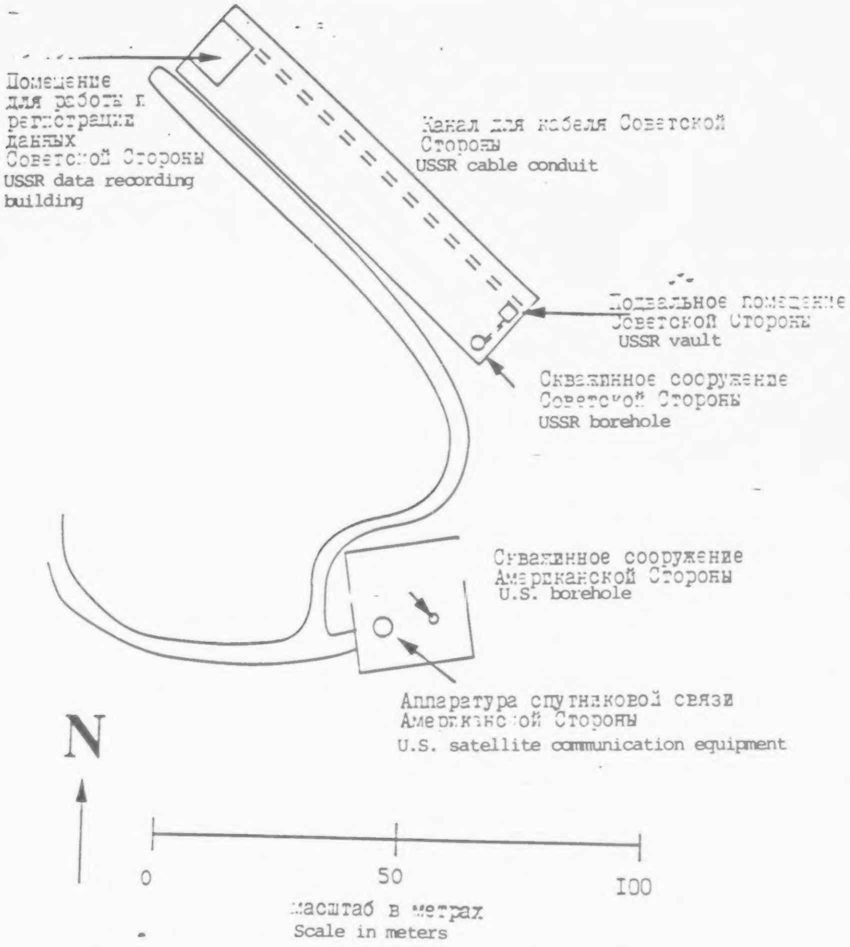
4. The housing accomodations shall be furnished with a telephone which has working connections in accordance with that provided for in the Protocol, including a connection to the data recording room at the Designated Seismic Station.


18
15
17
Здания и сооружения Американской Стороны (I - 17) U.S. buildings and structures
N
0
50
100
Масштаб в метрах
Scale in meters
11
10
12
9
3
4
5
2
7
6
14
16
8
Помещение для работы и регистрации данных и подвальное помещение Американской Стороны
U.S. data recording building and vault
Помещение для работы и регистрации данных Советской Стороны
USSR data recording building
Канал для кабеля Советской Стороны
USSR cable conduit
Подвальное помещение Советской Стороны
USSR vault
Скважинное сооружение Советской Стороны
USSR borehole

Ситуационная схема выделенной сейсмической станции Ньюпорт, шт.Вашингтон

Рис. 1

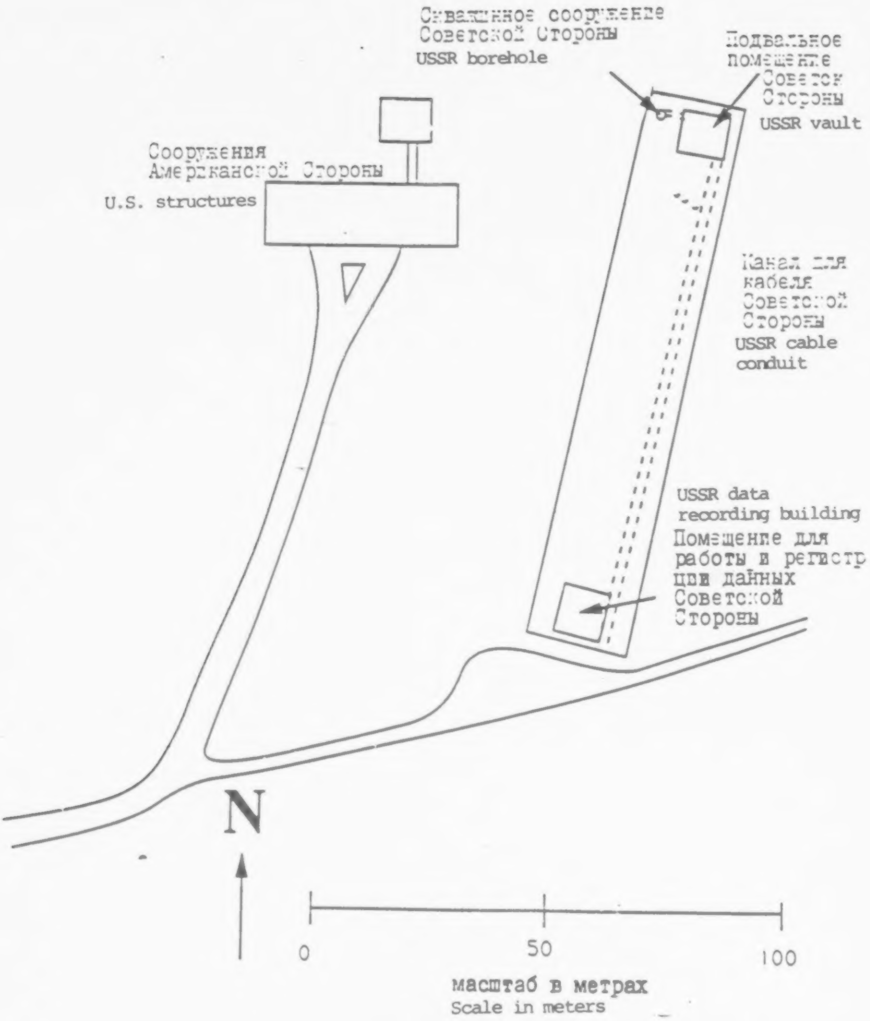
Fig. 1. Site diagram for the seismic station at Newport, Washington


Помещение для работы и регистрации данных Советской Стороны
USSR data recording building
Канал для кабеля Советской Стороны
USSR cable conduit
Подвальное помещение Советской Стороны
USSR vault
Скважинное сооружение Советской Стороны
USSR borehole
Скважинное сооружение Американской Стороны
U.S. borehole
Аппаратура спутниковой связи Американской Стороны
U.S. satellite communication equipment
N
0
50
100
масштаб в метрах
Scale in meters

Ситуационная схема выделенной сейсмической станции
Блек Хиллз, шт. Южная Дакота

Рис. 2

Fig. 2. Site diagram for the seismic station at Black Hills, South Dakota


Скважинное сооружение Советской Стороны
USSR borehole
Подвальное помещение Советской Стороны
USSR vault
Сооружения Американской Стороны
U.S. structures
Канал для кабеля Советской Стороны
USSR cable conduit
USSR data recording building
Помещение для работы и регистрации данных Советской Стороны
N
0
50
100
масштаб в метрах
Scale in meters

Ситуационная схема выделенной сейсмической станции Талсе, шт.Оклахома

РИС. 3

Fig. 3. Site diagram for the seismic station at Tulsa, Oklahoma

Vault Facility
Side View (A)
Design A

Подвальное помещение
Вид сбоку (А)
Схема А

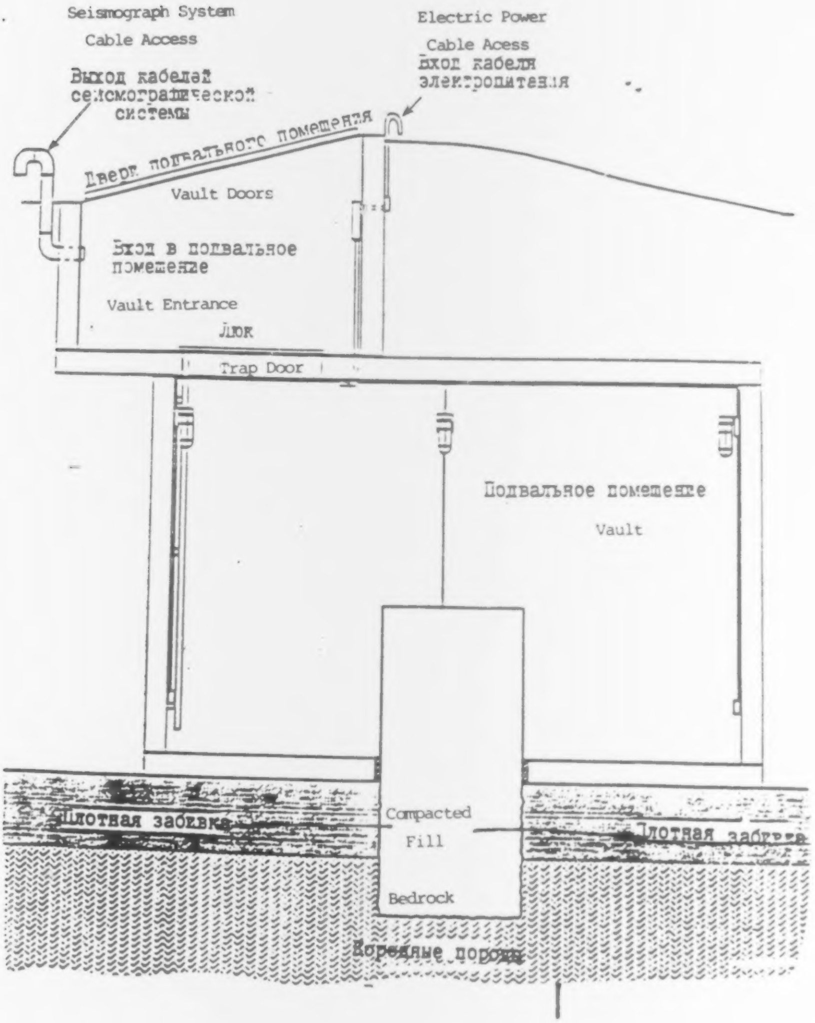

Seismograph System
Cable Access
Выход кабелей
сейсмографической
системы
Electric Power
Cable Acess
Вход кабеля
электропитания
Двери подвального помещения
Vault Doors
Вход в подвальное
помещение
Vault Entrance
Люк
Trap Door
Подвальное помещение
Vault
Плотная забивка
Compacted
Fill
Плотная забивка
Bedrock
Коренные породы

Figure 4

Vault Facility · Подвальное помещение
Side View (B) · Вид сбоку (В)
Design A · Схема А

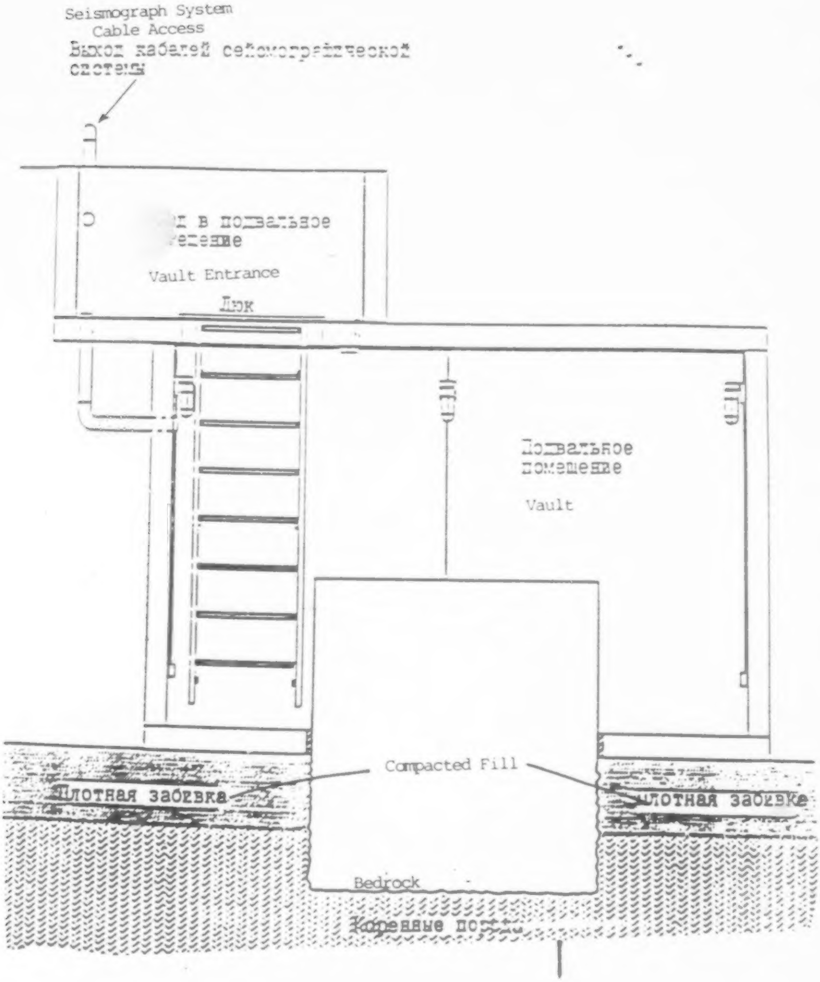

Seismograph System
Cable Access
Выход кабелей сейсмографической системы
[illegible] в подвальное
[illegible]ещение
Vault Entrance
Люк
Подвальное
помещение
Vault
Compacted Fill
Плотная забивка
Плотная забивка
Bedrock
Коренные породы

Figure 5

Vault Facility Подвальное помещение
Top View Вид сверху

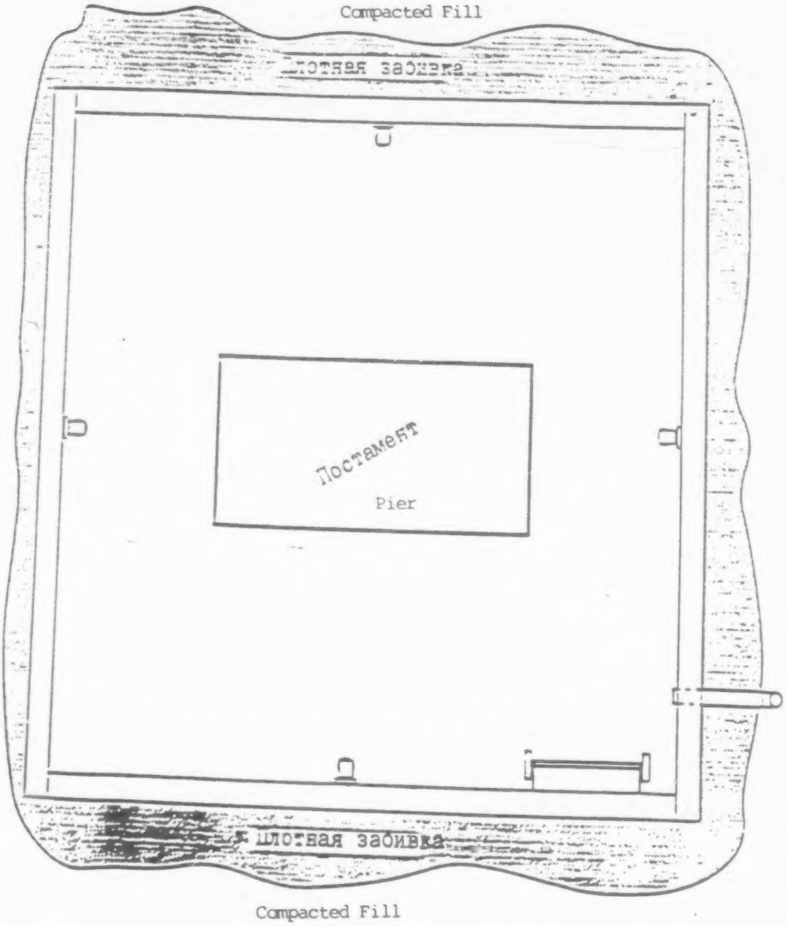

Compacted Fill
Плотная забивка
Постамент
Pier
Плотная забивка
Compacted Fill

Рис. 6
Figure 6

Vault Facility Подвальное помещение

Top View Вид сверху

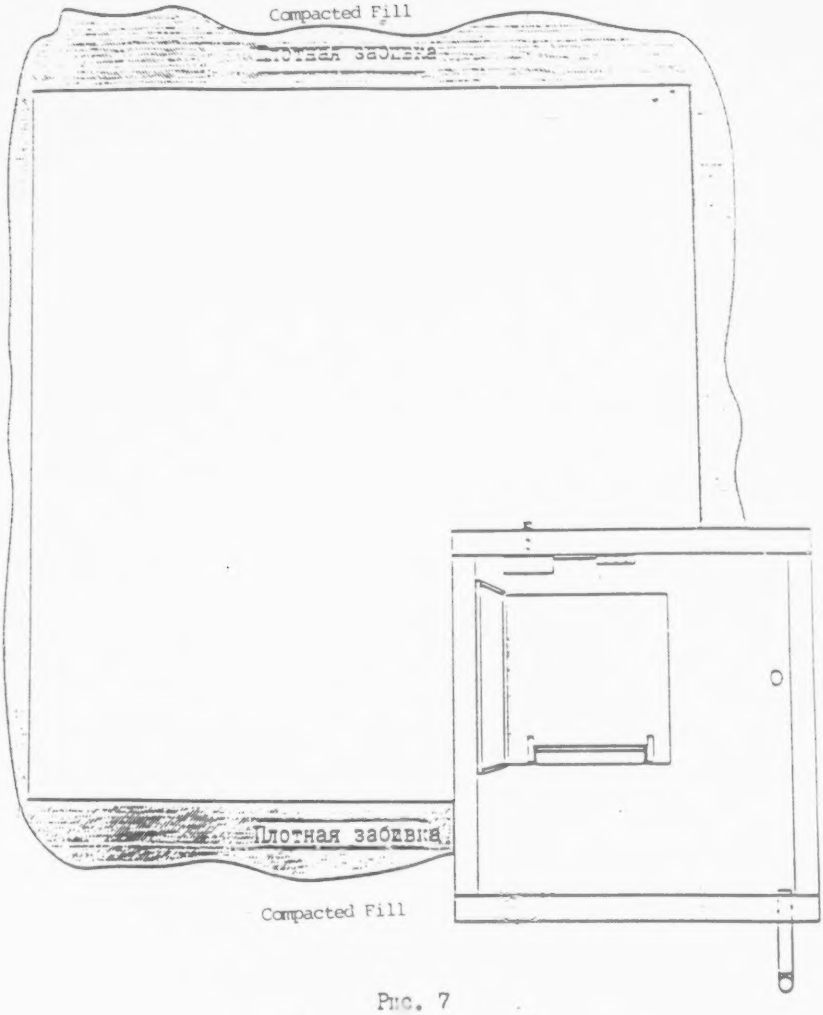

Compacted Fill
Плотная забивка
Плотная забивка
Compacted Fill

Рис. 7

Figure 7

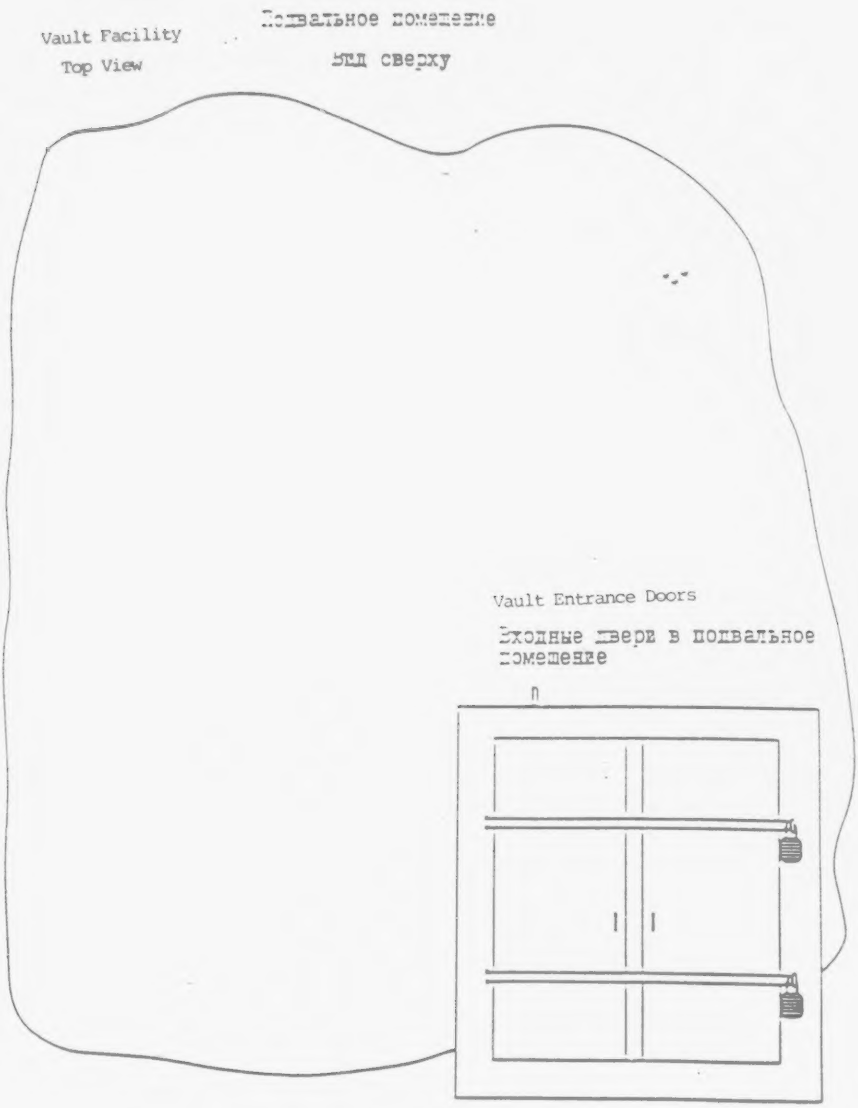

Vault Facility
Top View
Подвальное помещение
Вид сверху
Vault Entrance Doors
Входные двери в подвальное помещение

Рис. 8

Figure 8

SEISMOMETER PIER
Design A
3 Dimensional Side View

ПОСТАМЕНТ ДЛЯ СЕЙСМОМЕТРА

СХЕМА А
3-мерный вид сбоку

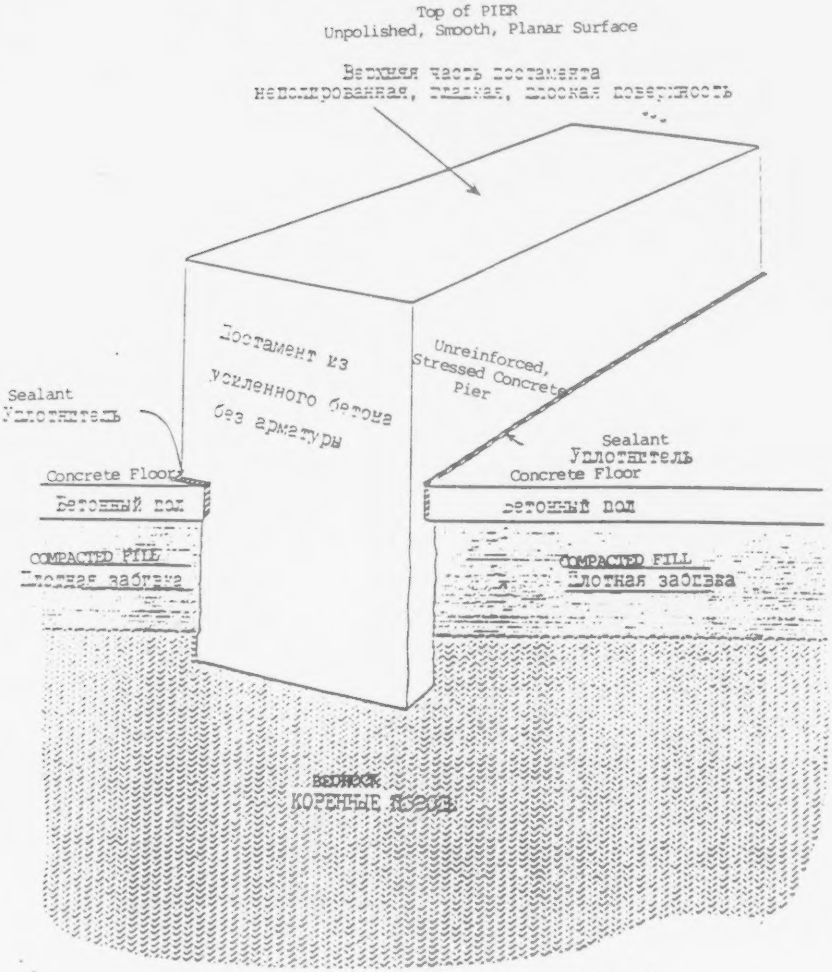

Top of PIER
Unpolished, Smooth, Planar Surface
Верхняя часть постамента
неполированная, гладкая, плоская поверхность
Постамент из
усиленного бетона
без арматуры
Unreinforced,
Stressed Concrete
Pier
Sealant
Уплотнитель
Sealant
Уплотнитель
Concrete Floor
Бетонный пол
Concrete Floor
Бетонный пол
COMPACTED FILL
Плотная забивка
COMPACTED FILL
Плотная забивка
BEDROCK
КОРЕННЫЕ ПОРОДЫ

Рис. 9 Figure 9

SEISMOMETER PIER
Design A
Side View A

ПОСТАМЕНТ ДЛЯ СЕЙСМОМЕТРА

Схема А
Вид сбоку А

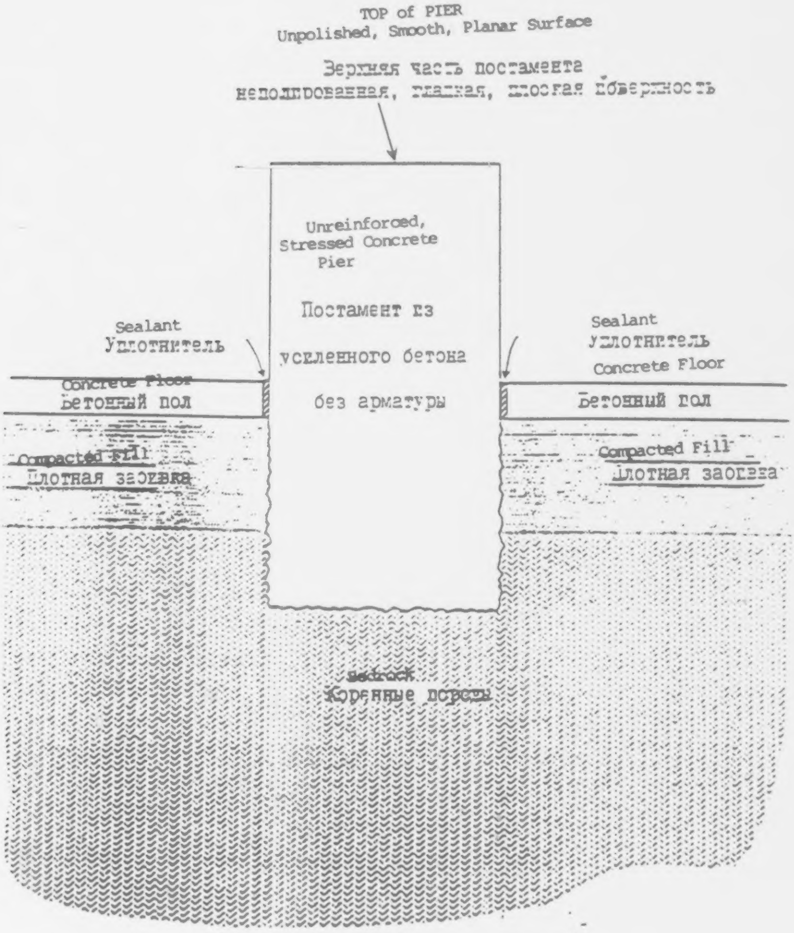

TOP of PIER
Unpolished, Smooth, Planar Surface
Верхняя часть постамента
неполированная, гладкая, плоская поверхность
Unreinforced, Stressed Concrete Pier
Постамент из усиленного бетона без арматуры
Sealant
Уплотнитель
Concrete Floor
Бетонный пол
Sealant
Уплотнитель
Concrete Floor
Бетонный пол
Compacted Fill
Плотная засыпка
Compacted Fill
Плотная засыпка
Bedrock
Коренные породы

Рис. 10 Figure 10

Seismometer Pier
Design A
Side View B

ПОСТАМЕНТ ДЛЯ СЕЙСМОМЕТРА

Схема А
Вид сбоку А

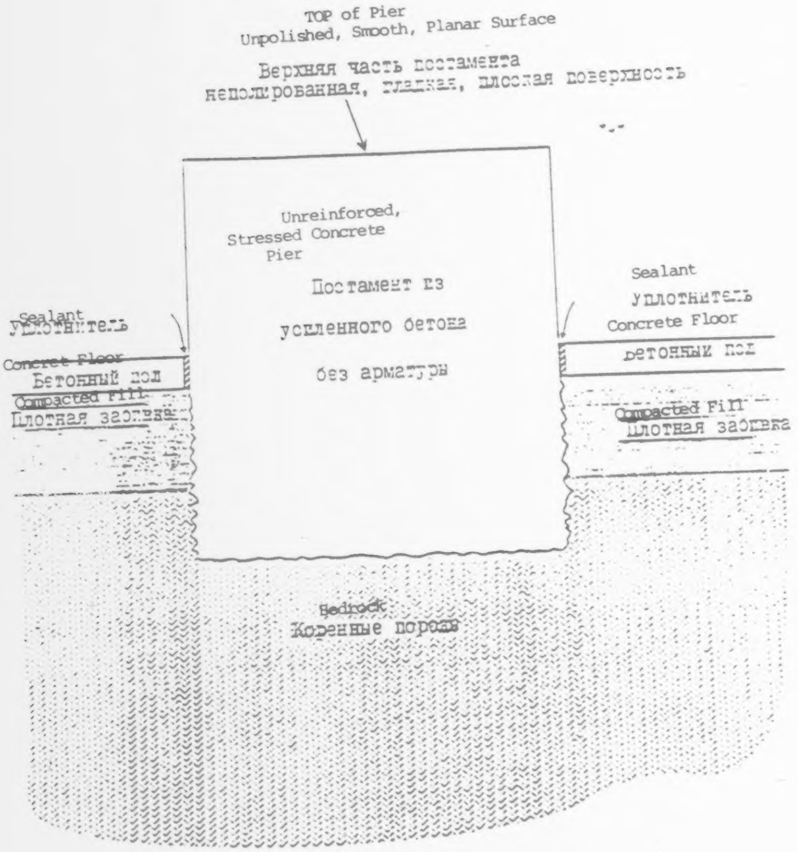

TOP of Pier
Unpolished, Smooth, Planar Surface
Верхняя часть постамента
неполированная, гладкая, плоская поверхность
Unreinforced,
Stressed Concrete
Pier
Постамент из
усиленного бетона
без арматуры
Sealant
Уплотнитель
Concrete Floor
Бетонный пол
Compacted Fill
Плотная засыпка
Sealant
Уплотнитель
Concrete Floor
Бетонный пол
Compacted Fill
Плотная засыпка
Bedrock
Коренные породы

Рис. II   Figure 11

VAULT FACILITY
Side View A
Design B

ПОДВАЛЬНОЕ ПОМЕЩЕНИЕ
Вид сбоку А
Схема В

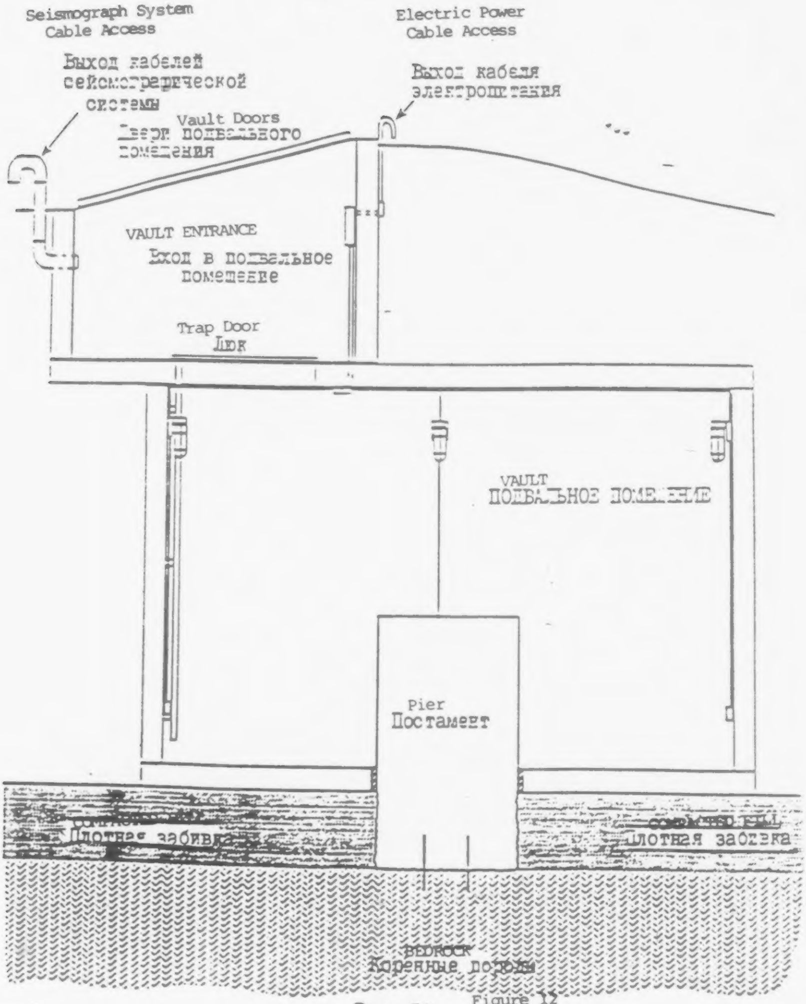

Seismograph System
Cable Access
Выход кабелей
сейсмографической
системы
Electric Power
Cable Access
Выход кабеля
электропитания
Vault Doors
Двери подвального
помещения
VAULT ENTRANCE
Вход в подвальное
помещение
Trap Door
Люк
VAULT
ПОДВАЛЬНОЕ ПОМЕЩЕНИЕ
Pier
Постамент
COMPACTED FILL
Плотная забивка
COMPACTED FILL
Плотная забивка
BEDROCK
Коренные породы

Рис. I2 Figure I2

VAULT FACILITY
Side View B
Design B

ПОДВАЛЬНОЕ ПОМЕЩЕНИЕ

Вид сбоку В

Схема В

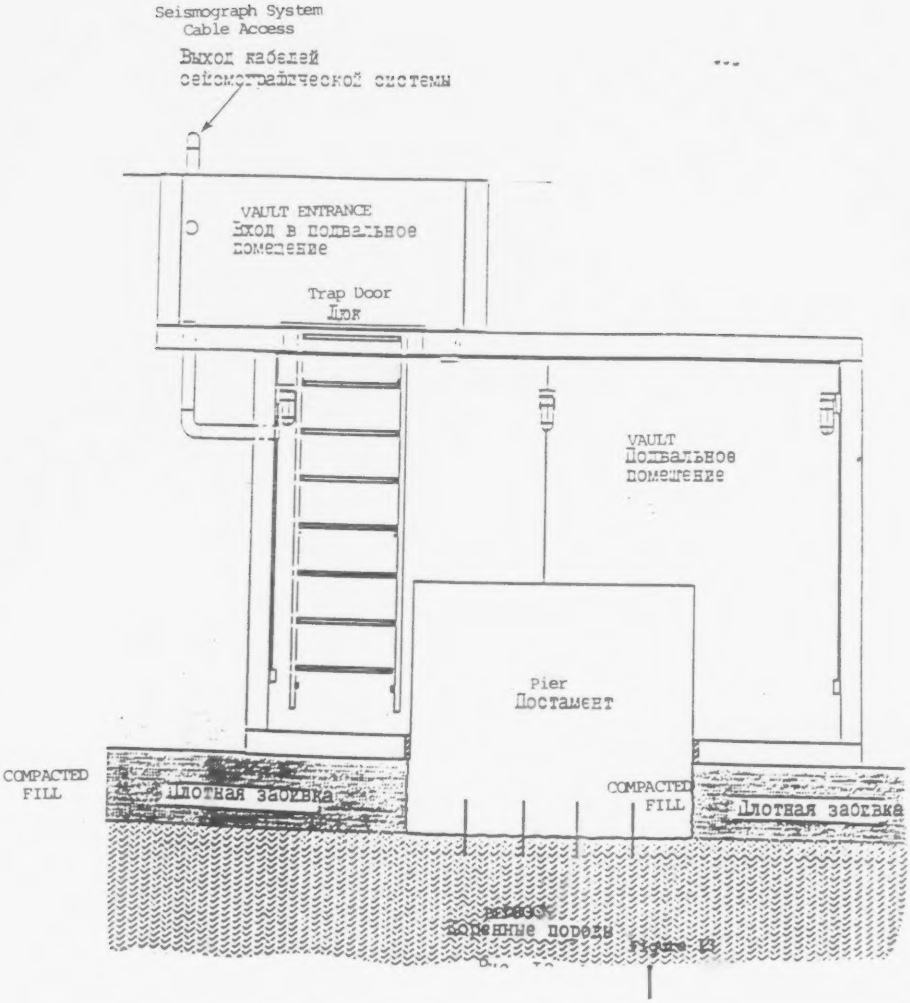

Seismograph System
Cable Access
Выход кабелей
сейсмографической системы
VAULT ENTRANCE
Вход в подвальное
помещение
Trap Door
Люк
VAULT
Подвальное
помещение
Pier
Постамент
COMPACTED
FILL
Плотная забивка
COMPACTED
FILL
Плотная забивка
BEDROCK
Коренные породы

Figure 13

Рис. 13

Seismometer Pier Постамент для сейсмометра

Design B Схема B

Side View B Вид сбоку B

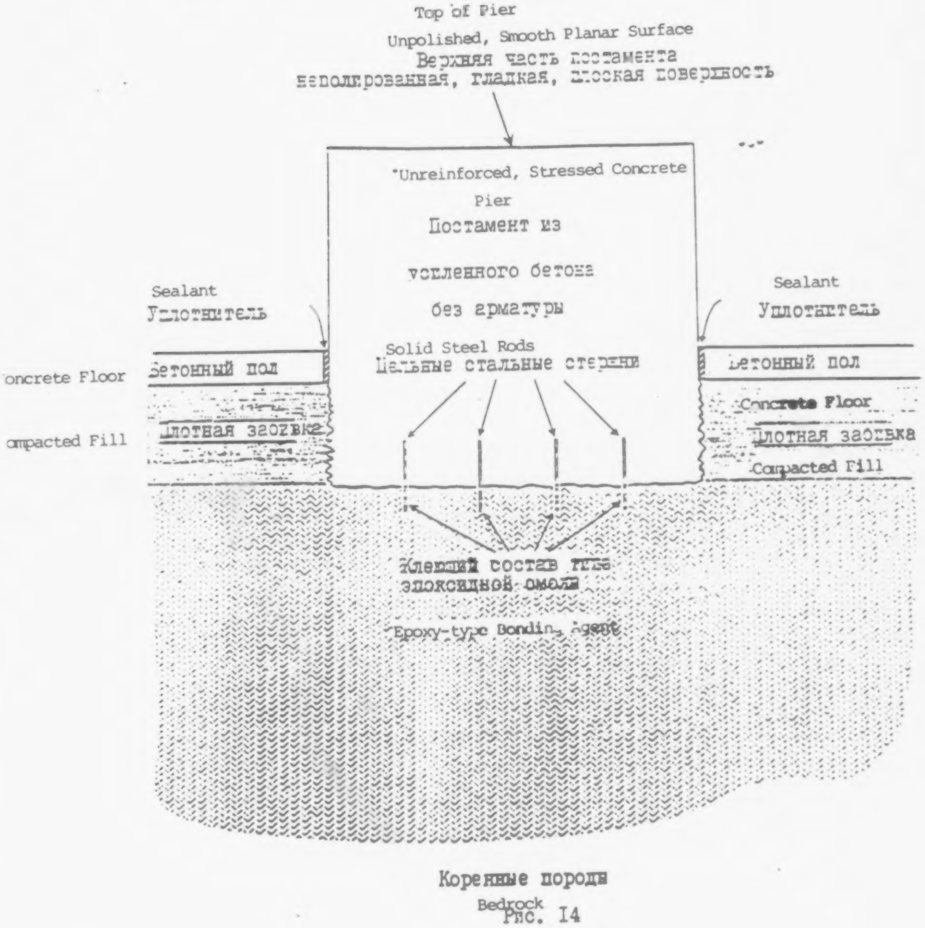

Top of Pier
Unpolished, Smooth Planar Surface
Верхняя часть постамента
неполированная, гладкая, плоская поверхность
Unreinforced, Stressed Concrete Pier
Постамент из усиленного бетона без арматуры
Sealant
Уплотнитель
Sealant
Уплотнитель
Solid Steel Rods
Цельные стальные стержни
oncrete Floor
Бетонный пол
ompacted Fill
Плотная засыпка
Бетонный пол
Concrete Floor
Плотная засыпка
Compacted Fill
Клеящий состав типа эпоксидной смолы
Epoxy-type Bonding Agent
Коренные породы
Bedrock

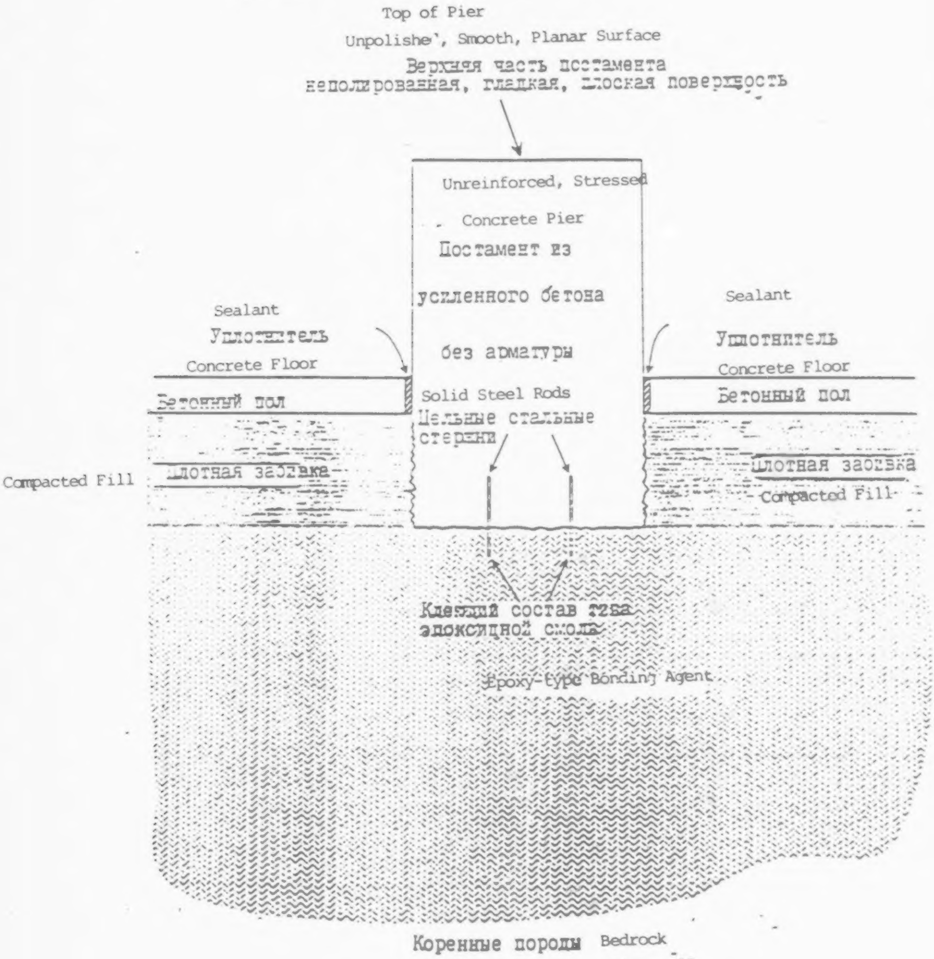
Рис. I4

Figure 14

Seismometer Pier Постамент для сейсмометра

Design B Схема В

Side View A Вид сбоку А



Top of Pier
Unpolished, Smooth, Planar Surface
Верхняя часть постамента
неполированная, гладкая, плоская поверхность
Unreinforced, Stressed
Concrete Pier
Постамент из
усиленного бетона
без арматуры
Sealant
Уплотнитель
Concrete Floor
Бетонный пол
Sealant
Уплотнитель
Concrete Floor
Бетонный пол
Solid Steel Rods
Цельные стальные
стержни
Compacted Fill
Плотная засыпка
Плотная засыпка
Compacted Fill
Клеящий состав типа
эпоксидной смолы
Epoxy-type Bonding Agent
Коренные породы Bedrock

Рис. I5 Figure 15

Скважинное сооружение
Boerhole Structure

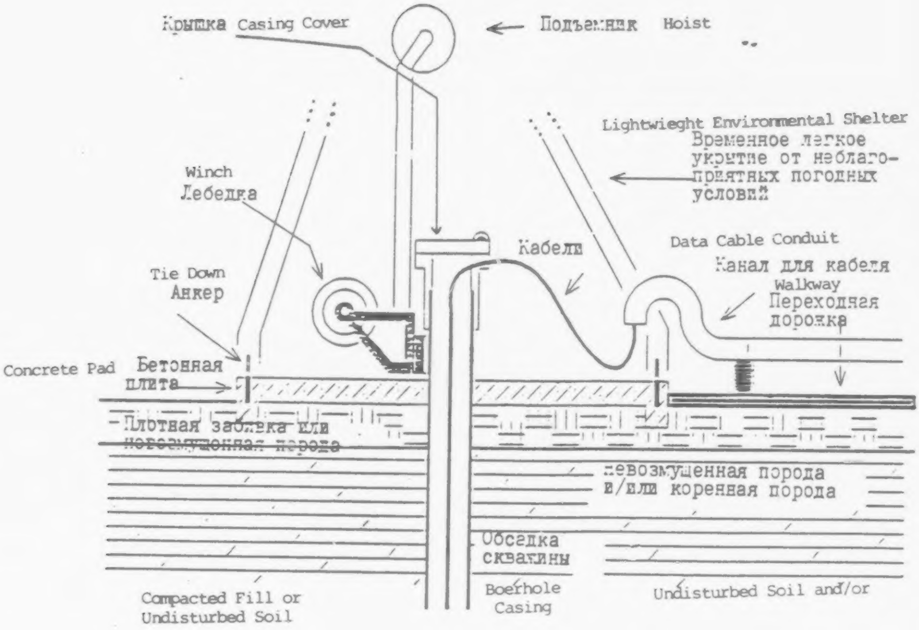

Крышка Casing Cover
Подъемник Hoist
Lightwieght Environmental Shelter
Временное легкое укрытие от неблагоприятных погодных условий
Winch
Лебедка
Кабели
Data Cable Conduit
Канал для кабеля
Tie Down
Анкер
Walkway
Переходная дорожка
Concrete Pad
Бетонная плита
Плотная засыпка или невозмущенная порода
невозмущенная порода и/или коренная порода
Обсадка скважины
Compacted Fill or Undisturbed Soil
Boerhole Casing
Undisturbed Soil and/or

Рис. I6
Figure 16